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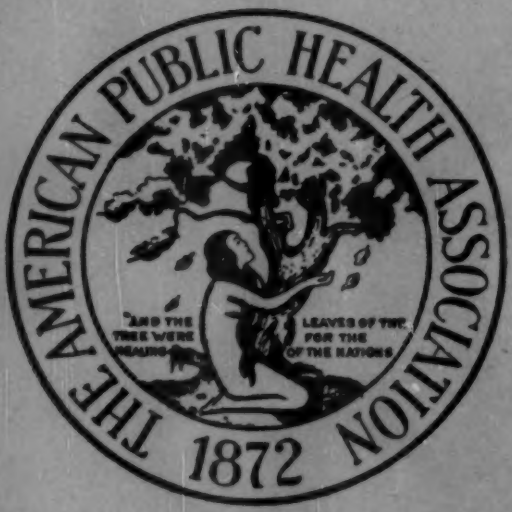

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[1] Nelson, R. A., Jr.: Science, 118: 733, 1953.
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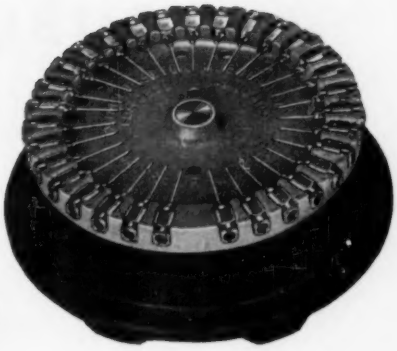

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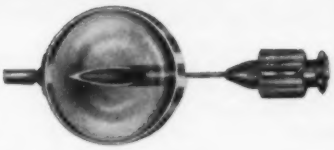

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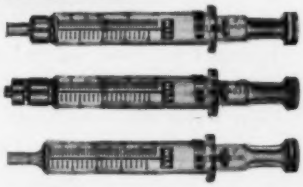

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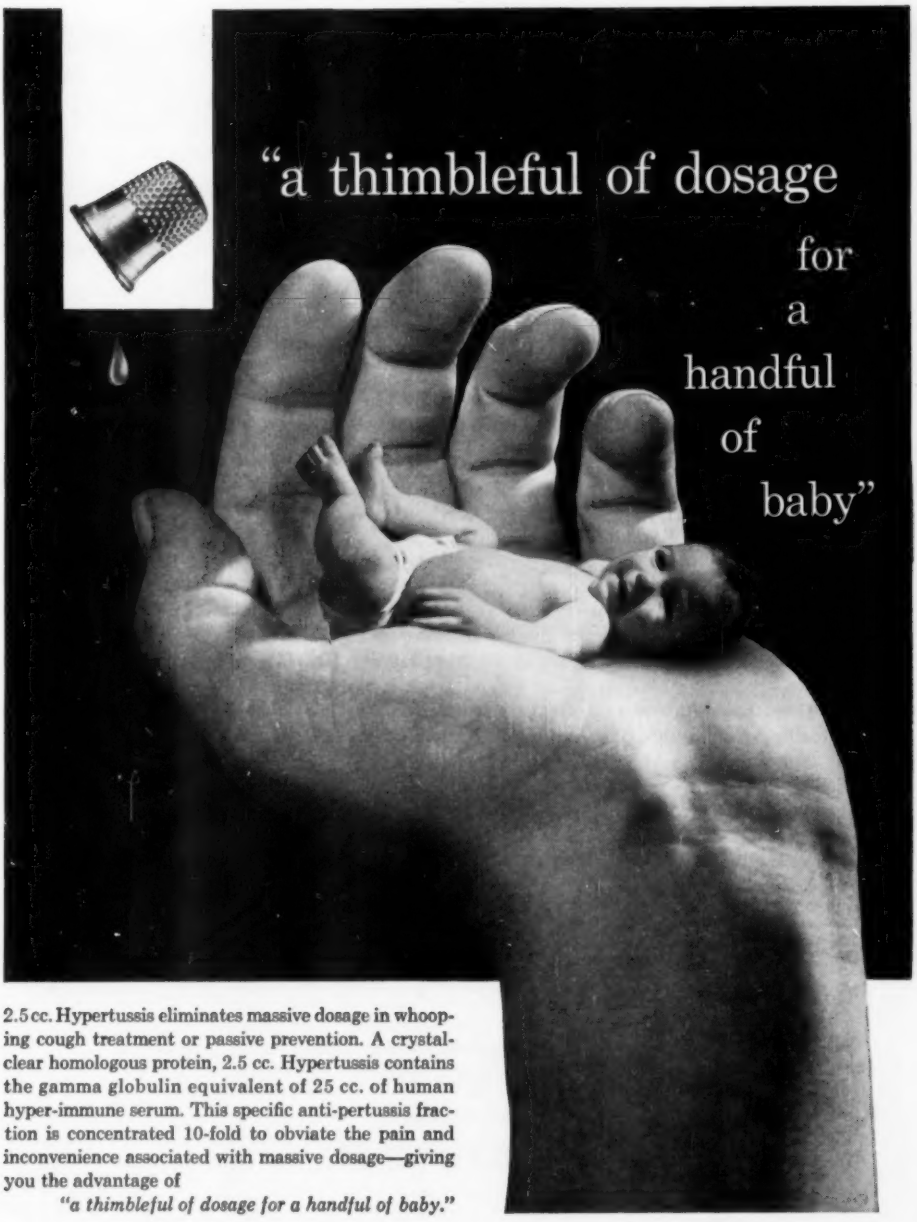

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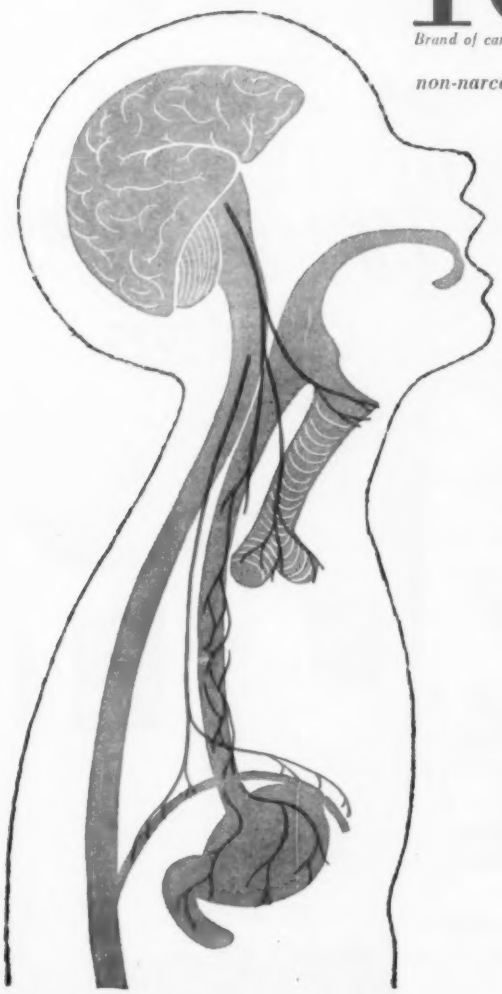

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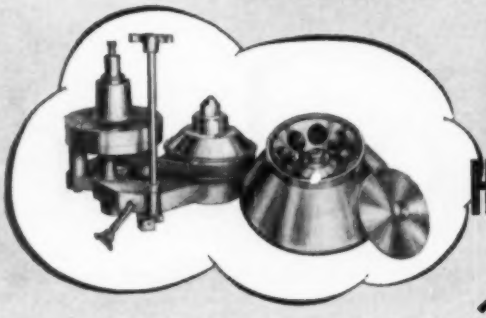

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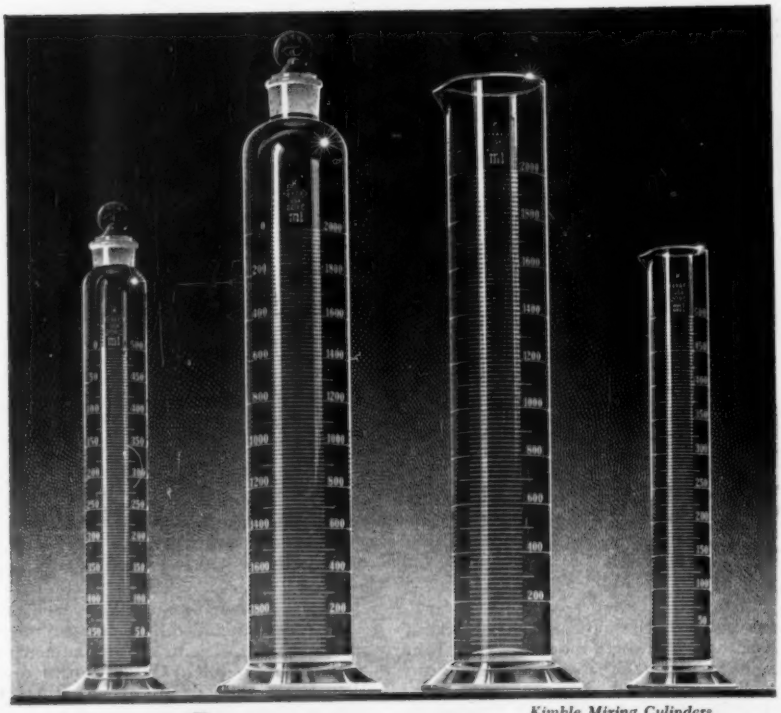

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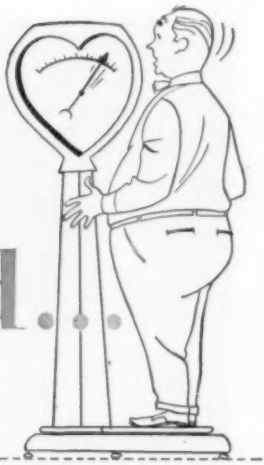

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*Murphy, W. P., Jr., Sproul, M. T., and Getz, E. J.: Hemolysis in Blood Collected for Plasma Processing. J.A.M.A. 158:449 (June 11) 1955. Reprint available from Becton, Dickinson and Company.

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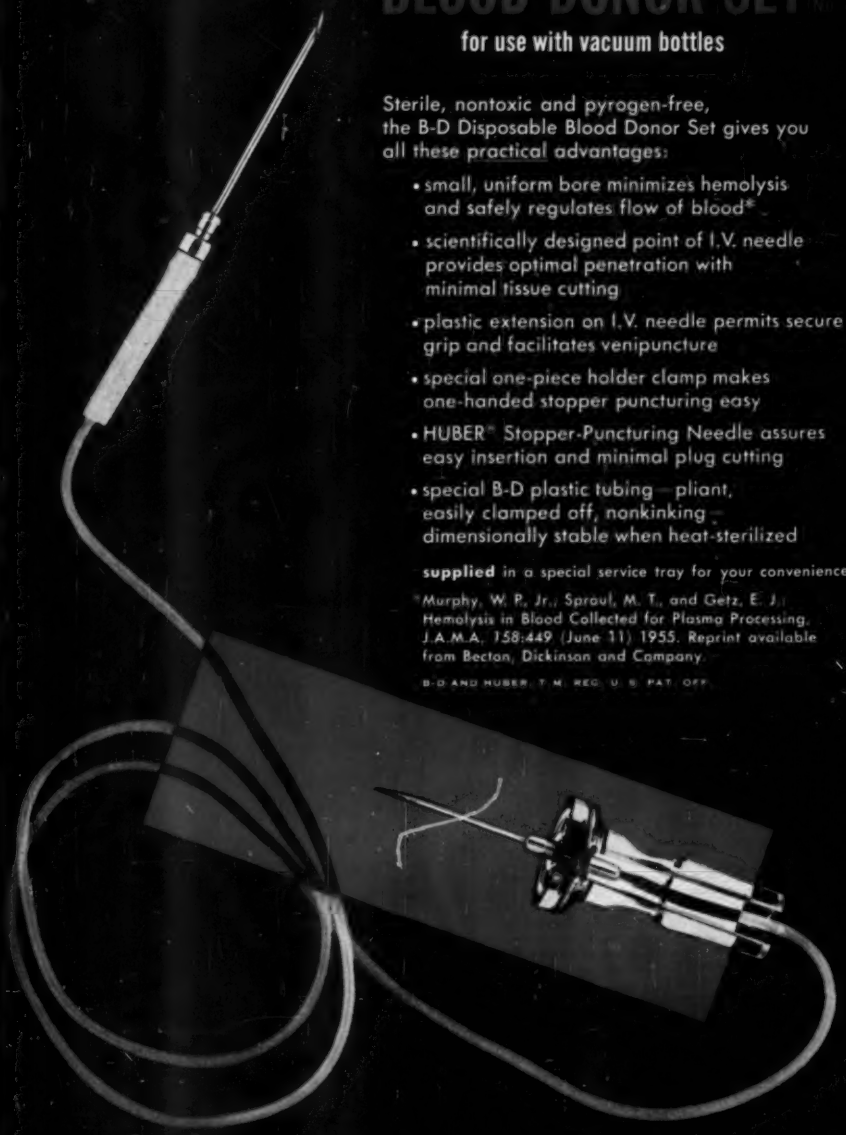

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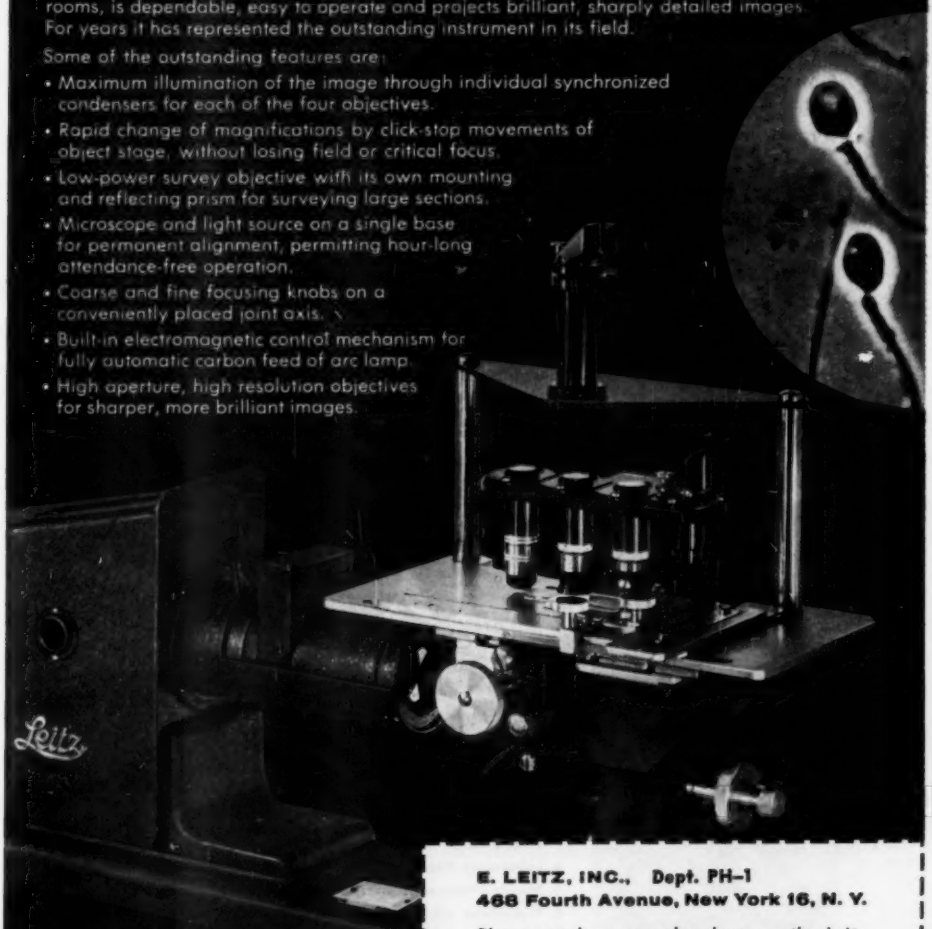

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1. Smith, C. A., and others: Am. J. Syph., Gonor. & Ven. Dis. 38:136 (March) 1954. 2. Council on Pharmacy and Chemistry: New and Nonofficial Remedies. J. B. Lippincott Co., Philadelphia, 1954, p. 148.

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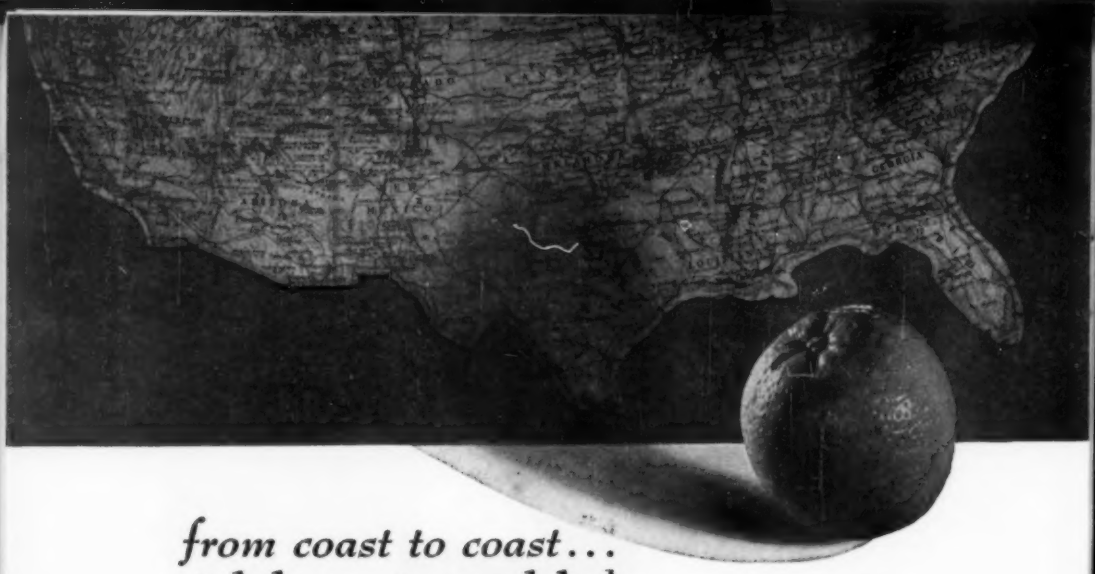

from coast to coast... Adolescents need help to avoid vitamin C deficiency

Typical reports from nutritional surveys show:

Among 780 junior high school students in Maine, two-thirds of the boys and one-half of the girls eat diets deficient in vitamin C.[1]

Teen-age boys in Iowa neglect foods rich in vitamin C while girls stint on all foods to keep fashionably slim.[2]

Daily meals of students in four colleges of the Pacific Northwest provide inadequate vitamin C more than 60% of the time.[3]

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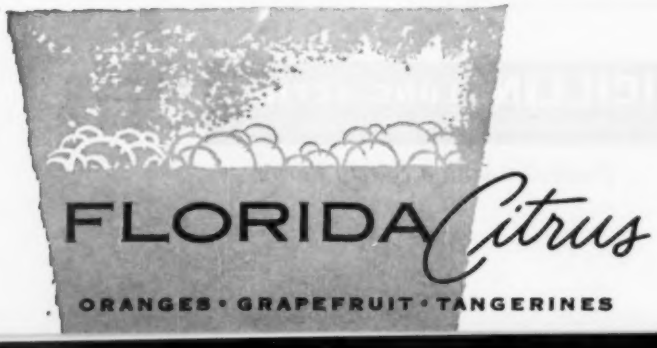
The taste appeal of the 'citrus snack'[4] makes this a simple, satisfactory way to help compensate for the nutritional deficits of teen-age meals which are too often of "the hot-dog, soft-drink, candybar type."[6]

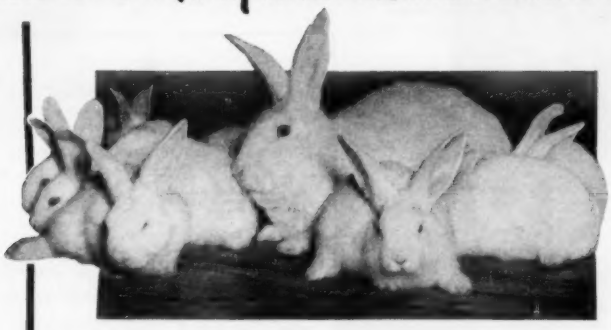
Teen-age Acne Problems may be a manifestation of inadequate vitamin C intake, and excellent results have been reported by correcting this deficit.[5]

Florida Citrus Commission
Lakeland, Florida



1. Clayton, M. M.: Maine Agric. Exper. Sta. Bull. No. 495, 1951
2. Eppright, E., et al.: Fed. Proc. 11:442, 1952.
3. Fincke, M. L., et al.: J. Am. Dietet. A. 24:957, 1948.
4. Mack, P. B.: at Conference on Research in Medicine, Lakeland, Florida, 1954.
5. Morris, G. E.: Postgrad. Med. 14:443, 1953; Am. Pract. & Dig. Treat. 5:658, 1954; A.M.A. Arch. Derm. & Syph. 70:363, 1954.
6. Young, C. M., et al.: J. Am. Dietet. A. 27:289, 1951.

Purina *laboratory animal* Nutrition News



FEEDING LABORATORY RABBITS

By H. C. Schaefer, Director, Laboratory Chow Research

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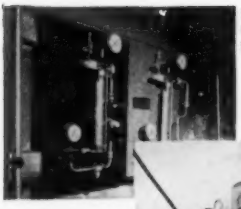
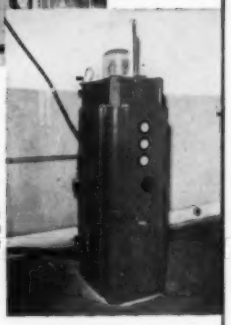


W & T 1919 type mechanical diaphragm chlorinator



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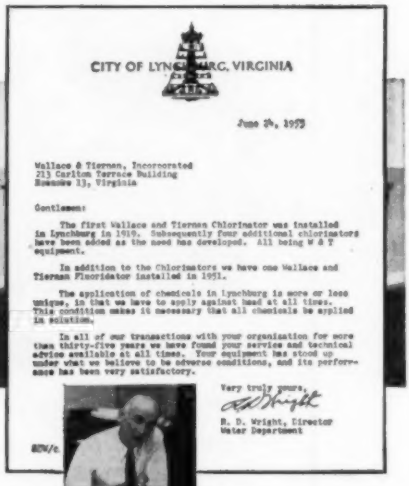

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Official Monthly Publication of the American Public Health Association, Inc

Volume 46 January, 1956 Number 1

Poliomyelitis Vaccine in the Fall of 1955

JONAS E. SALK, M.D., F.A.P.H.A.

This paper reflects Dr. Salk's conclusions growing out of the 1955 practical experience with poliomyelitis vaccine.

The results of the experiences with poliomyelitis vaccine in 1954, and again in 1955, take on much more meaning when they are viewed in the light of the underlying theory and the basic experimentation upon which the practices of each year were based.

It is understandable that, as a result of the episode of last spring,[1, 2] a prominent doubt developed and still continues to exist concerning the fundamental safety of a killed-virus vaccine. This is true even in view of the earlier work [3, 4] and of the field trial evidence,[5] and even though there has accumulated from the experience in three countries [6–8] evidence for the fundamental safety of properly prepared vaccine. In view of the doubt, then, "How does one ascertain vaccine safety?"

Determination of Safety

The principal objective is to eliminate, for all practical purposes, the presence of infectious virus from each single dose of each batch of vaccine released for use. This reduces the problem to each individual inoculated. This degree of safety cannot be ascertained merely on the basis of a test made on a sample of a "finished" batch—no matter how large the sample—unless, of course, the entire batch is tested and none remains to be used. Therefore, to provide the kind of assurance that is required for a vaccine that is made from an agent that possesses the potential hazard of *any* strain of poliomyelitis virus, more than the usual kind of care in processing and in testing is required [9] than had heretofore been applied to other less hazardous antigens.

This particular problem requires that tests be applied—not only on samples of the finished material, but on samples

Dr. Salk is professor of preventive medicine, Virus Research Laboratory, School of Medicine, University of Pittsburgh, Pittsburgh, Pa.

This manuscript is substantially Dr. Salk's contribution to the Special Session on Practical Experience with Poliomyelitis Vaccine, presented at the Eighty-Third Annual Meeting of the American Public Health Association in Kansas City, Mo., November 17, 1955.

The studies referred to were aided by a grant from the National Foundation for Infantile Paralysis.

PRODUCTION SEQUENCE OF STRAIN POOLS (pool no.)	CUMULATIVE VOLUME OF STRAIN POOLS PRODUCED (1 pool = 400 liters)	CUMULATIVE VOLUME TESTED IN TISSUE CULTURE (1000 ml/lot)	RESULT OF TEST FOR LIVE VIRUS Example A	Example B
1	400,000 ml	1,000 ml	0	0
2	800,000	2,000	0	0
3	1,200,000	3,000	+	0
4	1,600,000	4,000	0	0
5	2,000,000	5,000	+	0
6	2,400,000	6,000	+	0
7	2,800,000	7,000	0	0
8	3,200,000	8,000	0	0
9	3,600,000	9,000	0	0
10	4,000,000	10,000	0	0
11	4,400,000	11,000	+	0
12	4,800,000	12,000	0	0

Negative tests are less significant in proportion to the number of positives

Negative tests are of increasing significance as cumulative experience is extended

Figure 1—Significance of a Consistent Negative Record in Production and Testing of Monovalent Strain Pools (Assuming Sensitive Testing and Representative Sampling)

removed at several stages in the course of processing—to demonstrate the extent to which a calculated amount of overtreatment has been applied to each batch of vaccine, to create what is referred to as a "margin of safety." [9] This means a degree of treatment beyond that calculated to be necessary to care for the lingering virus that is expected to be the last to be acted upon.

It was recognized early in this work that a single negative test, of itself, was inadequate to establish safety with sufficient significance, but that a sequence of negative production lots is of increasing significance.[10] Therefore, any single negative test, in an erratic experience, is of diminishing significance in proportion to the frequency with which positives are interspersed when, theoretically, there should be negatives. This concept is illustrated in Examples A and B, in Figures 1 and 2, which show the influence upon the degree of confidence for safety that can be expected from a process that results

PRODUCTION SEQUENCE OF TRIVALENT VACCINE (lot no.)	CUMULATIVE VOLUME OF TRIVALENT VACCINE (1 lot = 1200 liters)	CUMULATIVE VOLUME TESTED IN TISSUE CULTURE (1500 ml/lot)	RESULT OF TEST FOR LIVE VIRUS Example A	Example B
1	1,200,000 ml	1,500 ml	0	0
2	2,400,000	3,000	+	0
3	3,600,000	4,500	0	0
4	4,800,000	6,000	+	0

Negative tests are less significant in proportion to the number of positives

Negative tests are of increasing significance as cumulative experience is extended

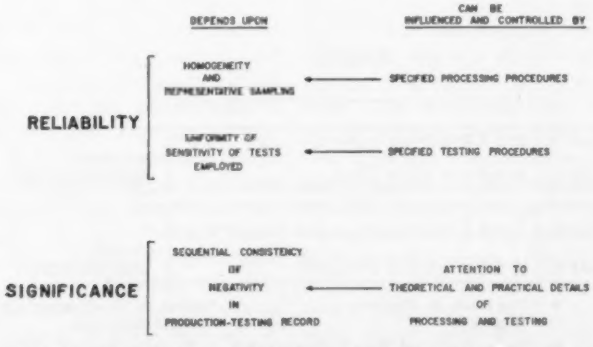
Figure 2—Significance of a Sequence of Negative Tests on Trivalent Vaccine Prepared from "Negative" or Presumably Monovalent Pools

in negative tests consistently (Example B) as compared with one in which positives are encountered from time-to-time (Example A).

The summary in Figure 3 emphasizes the elements of a negative safety test: (1) the reliability of the test system itself, and (2) the significance of a negative test for judging safety. The degree of *reliability* of any one negative test is dependent (a) upon the sensitivity of the testing system itself, which includes volume of sample as well as the demonstrated capacity of the system to detect trace amounts of infectious virus; and (b) upon physical homogeneity, since the latter can affect the validity of sampling, especially if virus were present in more than one physical phase, i. e., a fluid phase as well as a solid phase that could settle out of suspension. The degree of *significance* of a negative test, for an interpretation of safety, depends to a great extent, therefore, upon consistency of performance of the manufacturing process.

Each of the elements that contribute to reliability of testing and to significance for safety can be influenced and controlled by attention to certain practical details that are considered in charts that will follow: for example, the time at which samples for safety tests are taken, in relation to the rate at which virus is inactivated, as is illustrated in Figure 4. This simplified diagram shows that it is possible, routinely, to demonstrate the rate at which virus infectivity is destroyed in the early stages of inactivation; and it illustrates the way in which the reaction continues, as is demonstrable under experimental circumstances. On the basis of such observations a theoretical projection can be made which can be further verified by experience accumulated in the course of testing samples from successive batches of vaccine. If the samples removed at any of the intervals indicated (i. e., 6, 9, 12 days) are negative for infectious virus, and if such were the case in a succession of experiences, this would tend to validate the conception of the theoretical projection. This was, in fact, demonstrated in the course of preparing material for use in the field trial.[11]

The results of the field trial experience are illustrated in Figures 5 and 6. Figure 5 contains a comparison of the original and present interpretations of the available facts. The difference is due to the interpretation of the significance of lesions found in histologic sections of monkey CNS tissue. Three lots were suspect and, therefore, not used,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UNIFORMITY OF SENSITIVITY OF TESTS EMPLOYED
SPECIFIED TESTING PROCEDURES
SIGNIFICANCE
SEQUENTIAL CONSISTENCY OF NEGATIVITY IN PRODUCTION-TESTING RECORD
ATTENTION TO THEORETICAL AND PRACTICAL DETAILS OF PROCESSING AND TESTING

Figure 3—Reliability and Significance of a Negative Safety Test

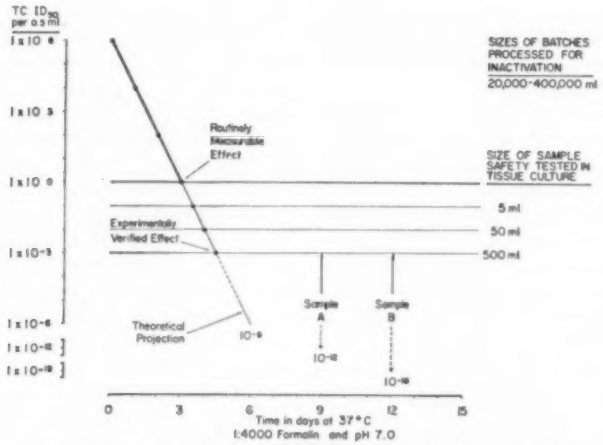


Figure 4—Combination of Processing and Safety Control

Relationship Between the Measured Rate of Virus Inactivation and the Time of Removal of Samples for Safety Test

even though the monkeys showed no signs of paralysis nor was live polio virus found in the tissue culture test. The findings in the CNS were incidental to the histologic examination of surviving animals; that the lesions were not due to poliomyelitis virus infection is the present opinion of Dr. David Bodian, who reviewed the histologic sections.

Although the cumulative experience in Figures 5 and 6 suggests that vaccine can be made in a consistently reliable manner and that the theoretical considerations (that were under test in the 1954 application) * were valid, it is

* Reference has been made [1] to the experience of a third manufacturer that did not, at first, achieve a similar degree of consistency during preparation of material that might have been used in field trial. It was recognized at the time this occurred that certain technical factors could explain the early difference in performance between manufacturers. The production of this manufacturer was not considered for use in the field trial because of inconsistency in achieving a negative test after treatment for the inactivation of virus.

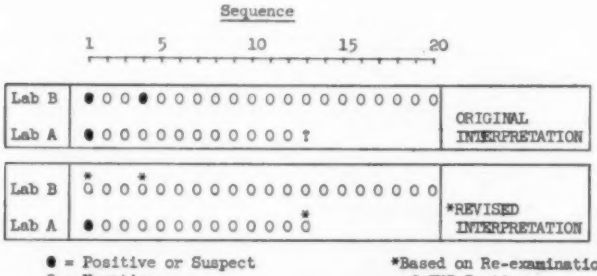


Figure 5—Experience of Two Laboratories in Inactivation of Virus for 1954 Field Trial Vaccine

Lab.	Lots	Trivalent Vaccine	Tested in T.C. and Monkeys	Monkeys Inoculated
	No.	Volume	Volume	No.
A	12	1,400,000 ml	3,312 ml	648
B	20	3,000,000 ml	5,520 ml	1,080
Total	32	4,400,000 ml	8,832 ml	1,728

Figure 6—Accumulated Consecutive Experience of Two Laboratories in Preparation of Vaccine for Field Trial Use

also known that in the beginning certain manufacturers experienced inconsistencies.[1] This fact has been interpreted several ways. One interpretation was that the theoretical considerations in processing and testing were not wholly sound[1]; that fundamentally it is not possible to prepare a killed vaccine safely[12]; another interpretation is that technical factors were responsible for the inconsistencies that were observed, but that the fundamentals were sound.[10]

Factors that Could Cause Inconsistency in Production

The fact that not all manufacturers experienced the same degree of inconsistency, and that the experiences of some did coincide with what was expected theoretically tended to support the view that the difficulties were due to technical factors. Further support[13] for this view was derived (1) from an analysis of manufacturing practices and experiences, (2) from tests upon fluids from certain of the manufacturing laboratories, and (3) from the effects upon the record of consistency, when specific attention was directed to certain technical details. This has been more fully discussed by the Public Health Service Technical Committee on Polio Vaccine in a report[13] to the Surgeon General. The discussion that follows is drawn, in part, from the substance of this report.

An analysis[13] of information on manufacturing practices and experiences available to the U. S. Public Health Service's Technical Committee on Poliomyelitis Vaccine suggested the likelihood that virus incorporated in a solid phase, and out of contact with formalin, could be responsible for incompleteness of inactivation; this surmise was confirmed by direct test upon fluids obtained from different sources. A schematic presentation of these test observations, and of their interpretation, is shown in Figure 7 in which is illustrated the effect of the existence of virus-containing sediment that prevented contact between virus and formalin. It is clear that under such circumstances virus could not be expected to be destroyed by the formalin with which it had had no contact. It was for reasons, such as this, that the original requirements stated that filtration be done before inactivation; the purpose being the removal of particles of such size as might incorporate and protect virus from interaction with formalin.[9]

Still further investigation[13] revealed that filtration was not always carried out shortly before the inactivation step; at times, weeks or months elapsed between filtration and formalin treatment. During such periods of storage precipitates tend to form. Failure to remove such precipitates, with incorporated virus, could result in incomplete interaction between formaldehyde and all of

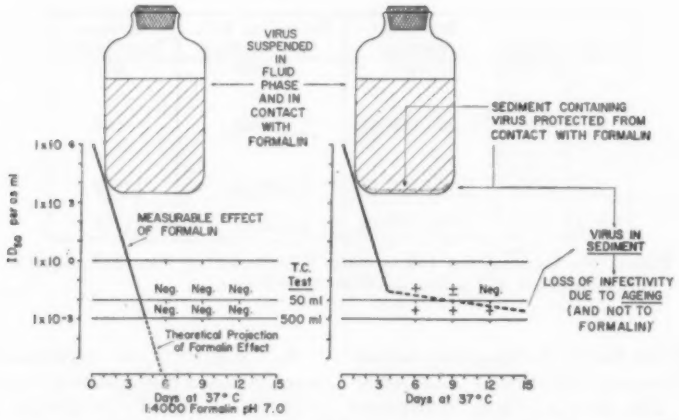

VIRUS SUSPENDED IN FLUID PHASE AND IN CONTACT WITH FORMALIN
SEDIMENT CONTAINING VIRUS PROTECTED FROM CONTACT WITH FORMALIN
MEASURABLE EFFECT OF FORMALIN
VIRUS IN SEDIMENT
LOSS OF INFECTIVITY DUE TO AGEING (AND NOT TO FORMALIN)
T.C. Test
Neg. Neg. Neg.
50 ml
Neg. Neg. Neg.
500 ml
Neg.
Theoretical Projection of Formalin Effect
Days at 37° C
1:4000 Formalin pH 7.0
Days at 37° C

Figure 7—Effect of Virus-Formaldehyde Contact Upon Rate of Destruction of Virus Infectivity

the virus and could readily account for incompleteness of inactivation.

Other facts that emerged from these inquiries were that there existed differences in the kind of filter system used, as well as differences in filtration practices, so far as elapsed time of storage between the harvesting of fluids and filtration. These details are to be described by the Technical Committee whose study correlated these observations.

Essentials for Consistency in Production

A great deal was learned from the different processes in effect, and as a result certain practices were recommended and others were required to obviate such variation. Those required to accomplish basic uniformity are summarized graphically in Figure 8. It may be seen here that a filtration is required within 72 hours of beginning inactivation. Another filtration step has been added as a further requirement against the contingency of the formation of precipitates, or of protected virus particles, or aggregates, before inactivation is completed. This additional filtration is to be carried out at a point in the process when virus infectivity has been reduced to levels that are not readily detectable, which is sometime between the third and sixth days. The continuation of treatment for the predetermined time should be as effective in destroying infectivity as is suggested by the "theoretical projection," and this is verified by tests upon samples as is indicated in Figures 7 and 8.

The required tests in tissue culture are made during the first three days of treatment to establish the degree of inactivating effect of formaldehyde upon virus, and, again, during the last three days of treatment to verify the completeness with which the inactivating effect has been accomplished. Thus, there is built into the manufacturing and testing process a measure of safety that far exceeds in significance merely the isolated results of a set of tests upon a particular lot that is being considered for use in man. This is accomplished by relating treatment time and the time of selection of safety-test samples to the rate of virus inactivation and by considering the consistency with which

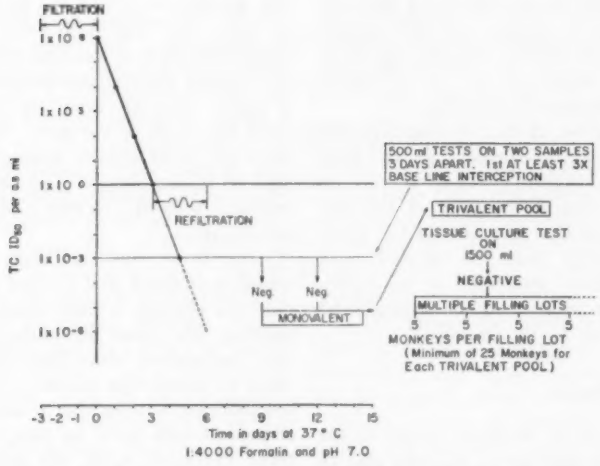


Figure 8—Guarding Safety by a Combination of Requirements for Processing and Testing

negative tests are obtained in successive lots.

In addition, further tests are required on the trivalent mixture. The report that a mixture made of three negative monovalent pools sometimes has revealed live virus has led some to speculate about the possibility of reactivation of virus believed to be inactivated. This could occur readily where virus is contained in sediment in the monovalent pool, only to be revealed in samples removed shortly after stirring of sediment upon admixture of the three strain pools.

After a negative tissue culture test of the trivalent pool, still another safety test is performed—this one in monkeys. This is done on samplings of the different filling lots. It has been recognized not only that the monkey test is less sensitive than the tissue culture test for detection of small amounts of virus, but that difficulties can occur as a result of so-called "false-positives" (Figure 5). This problem has now been reduced by changes in the manner of performance of the monkey test and in the criteria for establishing the significance of histologic changes, especially when these are not accompanied by signs of paralysis. The greater sensitivity of the tissue culture test does not obviate the need for a test in monkeys at this stage of experience.

Since a number of months are normally required for completing the testing of a lot of vaccine, after completion of the inactivation process, information is available on consistency, not only for the period preceding the start of manufacture of any one lot, but for a period of several months that follow, and before the lot is ready for release. Thus, the value of the consecutive record, as a safety guide, is enhanced by the availability of information on inactivation *after* preparation of the lot of vaccine that is considered for release, as well as *before* its manufacture was begun. Although the significance and importance of this was not as thoroughly appreciated before, as it is now, this concept was the basis for

the statement about consistency that has been retained through several amendments to the Public Health Service's Minimum Requirements for Preparation of Poliomyelitis Vaccine.[14]

The purpose of the information and analyses just presented is to help answer the question "How is vaccine safety determined?" Each of the several elements that are part of the question of safety must be applied with equal vigilance, regardless of the pathogenic characteristics of the strains used for inclusion in the vaccine.

Mahoney Strain

The use of the Mahoney strain in the initial investigations in animals, and in the initial studies in man, was determined by a number of deliberate considerations: (1) At first, of all of the Type I strains examined in the initial attempts to find viruses that would grow well in tissue culture, this strain surpassed all others.[15] With further developments in tissue culture technics differences between strains, in this respect, have been considerably reduced. (2) Since the monkey was more sensitive for the detection of Mahoney virus than the earliest tissue culture systems, while for detecting MEF–1 and Saukett the tissue culture system was more sensitive than the monkey,[3] it seemed wise to work with viruses of both types to permit the development of methods that would destroy virus more readily detectable in either system. Such methods could then be applied to viruses of any variety in accordance with the needs of the problem. Further developments have now made the tissue culture test more sensitive than the monkey test for all three strains. (3) In the absence of direct knowledge of the relationship between virulence and antigenicity it seemed desirable to investigate the effectiveness of a vaccine made from a particularly virulent strain. The decision to orient the investigation in this way was influenced by the knowledge that a vaccine made from the virulent Phase I pertussis organisms is more effective than vaccine made from less virulent varieties. Moreover, there are other similar examples in the field of immunology[16] and this consideration seemed worthy of further investigation.

Also, there was the basic scientific question of proof that a killed-virus vaccine can actually induce immunity. For proving this point the Mahoney strain was best suited, since this would then leave no doubt that monkeys vaccinated successfully, without the development of disease, would have, in fact, developed their immunity from the killed virus. The successful vaccination of human subjects, without the induction of disease—either in the subject himself or in his familial associates or community contacts—provided the desired proof that antibody could, in fact, be induced by a nonliving form of the poliomyelitis virus and gave further support to the hypothesis that living virus was not needed for immunization against this disease.[17] Furthermore, it appeared that with due care, vaccine with this strain—a particularly virulent one—could be prepared safely. If this be so, then surely, the fundamental scientific question of safety and effectiveness of a killed-virus vaccine could be answered decisively.[5] This, I believe, has been done.[6]

If the Mahoney strain had not been used, the significance of the scientific proof might have been questioned. In fact, even today, there are some who are of the opinion that the only reason antibody is formed after vaccination with a killed-virus vaccine is because of the presence of traces of live virus or of virus that becomes "reactivated" after injection. For these hypotheses no proof has been presented, and the weight of evidence is to the contrary.

The Question of Strain Change

The wisdom of continuing the use of Mahoney strain for preparation of vaccine on a large scale has been questioned [18] understandably. The existence of defective vaccine was first revealed because of the effect of this component in those who received such vaccine. The opinion that vaccine should not be made with the Mahoney strain still left unresolved the reasons for the defections in the vaccine preparation and testing process that permitted this to occur. The solution of the basic problem would solve simultaneously the problem of the Mahoney strain, since this same solution would be applicable to any virus, regardless of its potential pathogenicity for man. If the basic problem has, in fact, been solved, then the question of change of strain is being considered for reasons other than that it is essential for the preparation of a safe vaccine; the hazards of any living polio virus are to be avoided.

A change was contemplated over a year ago as a result of observations which revealed the lesser stability of Mahoney, in the presence of merthiolate—hence the poorer showing for Type I as compared to Types II and III in the field trial.[4] When this observation was made [11] a study was instituted to select another Type I strain.

The problem of the instability of the Mahoney strain—and of the other strains as well—in the presence of merthiolate was controlled promptly in a number of ways. These have all been put into practice; preservatives may be omitted entirely; merthiolate used in combination with versene,[4] or any one of a number of other preservatives can be used. The practice in the United States is to use a preservative, while in other countries it is omitted.

Even though the stability problem seemed to have been resolved, the study of strains was continued because of interest in the basic question of the interrelationship, if any, between virulence and antigenic capacity. It is now evident that degree of virulence and degree of antigenic capacity are independent variables; each can be cultivated separately or together. The problem has now been sufficiently far advanced to indicate that a group of strains exist, within each type, that are in the lower range of virulence for animals, and that are equal to or better, antigenically, when compared with strains of higher virulence.

It has been established, also, in the course of these studies [19] and by others [20, 21] that virus populations that are dominantly avirulent can give rise to offspring that are virulent. For this reason, the assurance of the absence of infectious virus is of first importance in preparing vaccine.

The opinion has been expressed that vaccinations should cease pending the production of vaccine containing "avirulent" strains for all three types or that there be a halt until the Mahoney strain is replaced.[22] This opinion can be questioned in terms of the relative importance (1) of safeguards based upon rigid requirements for production and testing as compared with safeguards based upon strain composition and (2) in terms of the advantages that could result from the availability of a supply of properly produced and tested vaccine as compared with a lesser supply that could be expected as a result of an abrupt change-over. These two alternatives must be considered in proper perspective to guide the judgment of those who have the responsibility for the decisions involved in vaccine manufacture, vaccine application, as well as those for safeguarding the public health.

Factors Related to Effectiveness

Evidence continues to accumulate indicating that the prevention of paralysis is mediated through the action of anti-

body. On the basis of this evidence the presence of antibody in the circulating blood could be regarded as synonymous with immunity. However, it seems that if antibody was once present, but has declined to nonmeasurable levels, that a state of immunity continues. The mechanism that appears to be operative is that of a hyperreactive antibody response.[23] Although it is known that the presence of a measurable level of antibody will prevent paralytic polio in the lower primates,[17, 24] and probably in man,[25] it is not known what degree of hyperreactivity, in the absence of measurable circulating antibody, is sufficient for prevention of paralysis. It appears from studies reported elsewhere [23] that the degree of hyperreactivity of the immunologic mechanism required is very little; more precise information should be forthcoming from studies now in progress.

Thus, the primary objective of an immunization program is that of inducing the formation of a measurable level of circulating antibody in all vaccinated subjects—and in so doing to have stimulated the immune mechanism in such a way that the resulting hyperreactive state will persist throughout life, even though in the course of time antibody levels decline; this occurs whether antibody is the result of vaccination or natural infection.[4] The basic goal is the initial production of antibody, since this would reflect the effectiveness of the primary stimulation that accompanies the initiation of the hyperreactive state. The use of secondary, or booster stimulation, is to assure further the full development of the hyperreactive state and to serve as a third opportunity to induce primary stimulation if this may have failed on both previous occasions for any one of a number of reasons—relative insensibility of the vaccinated subject, or because of the use of vaccine of low potency.[4]

The goal is to achieve the maximal effect with the minimal amount of treatment. The critical factors are (1) antigenic mass,[10] i.e., potency of vaccine and volume inoculated, and (2) the number of inoculations and the spacing between each.[4, 10] Vaccine potency and stability are the most critical factors in this regard.

While the degree of antigenic potency of vaccine can be established technically in any of a number of ways the significance of any laboratory test can be established only by comparison between the vaccine under test and a reference vaccine,[4] the performance of which has been standardized in fully susceptible children.[10] Such a reference vaccine has been established and standardized and is being used.

Correlation between level of potency of lots of vaccine used in areas where epidemics occurred in 1955, and the degree of effectiveness observed after a single dose, will contribute considerably to the establishment of a rational limit of potency to be required for maximal effectiveness. From such correlations it should be possible, also, to gain further insight into the requirements for persistence of vaccine effectiveness in terms of level of antibody associated with immunity to paralysis.

In view of certain details in the Francis Report [5] questions have been raised about the immune response in relation to age. The answers to these questions may be seen in Figures 9 and 10 which show, respectively, antibody response to infection and to vaccination in individuals of different ages. It would appear from these data that, over the age range studied, there are no significant differences in terms of antibody response to the two different kinds of antigenic stimulation.

No further developments have occurred to warrant changes in the recommendation for two doses, spaced not less than two weeks apart and, preferably, four to six weeks apart. A third dose

Figure 9—Antibody Response in Relation to Age

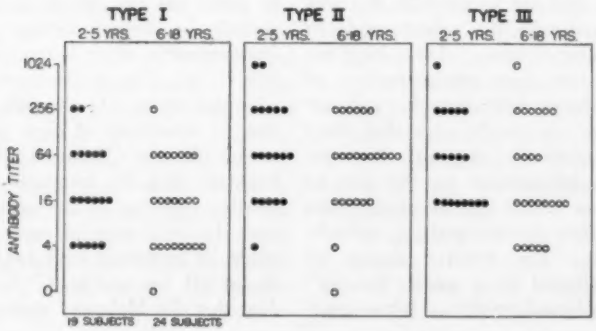
Type I Antibody Levels in a Group of 87 Recently Paralyzed Convalescents (1952—Pittsburgh)

Antibody Titer	Age Group 1-2-3 yr.	4-5-6 yr.	7-8-9 yr.	10+yr.
2048		•		
1024	••••	•	•	
512	•••	••••••	••••	•••
256	••••••••••	••••••••••••	••••••	•••••
128	••	•••	•••	•••
64	•••	••••	•••	••••••••
32		•		•
16				••
8				
No. Subjects	21	27	17	22

is required for producing the full effect; this can be approximated by administration of the third dose at least seven months after the second. Whether or not reinoculation will be required preschool, for maintenance of immunity, for children first vaccinated early in life, or additional inoculations to compensate for low potency—if found to be less than optimal—will be determined by continued study; appropriate recommendations will be suggested.

Figure 10—Antibody Response in Different Age Groups with No Demonstrable Preantibody for Any Type

Two Doses of Vaccine Given 4 Weeks Apart (1 ML.-I.M.)



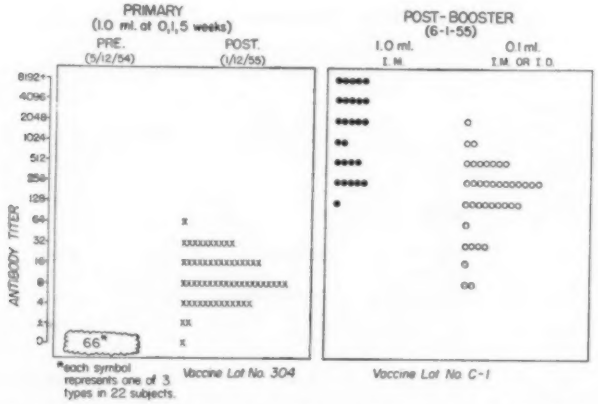


Figure 11—Influence of Dose on "Booster" Response in 22 Children with No Demonstrable Preantibody for Any Type

Until such time, the schedule recommended can be regarded as optimal and the dose for all ages is 1 ml, given either *intramuscularly* or *subcutaneously*. Although the intramuscular response is perceptibly better than the subcutaneous, this is not sufficiently great to be so significant as to warrant the use of one route to the exclusion of the other.

The only limitation in the usefulness of the *intradermal* route is the amount of antigen that can be so administered. Any demonstrable immunologic advantage of the intradermal route, in terms of efficiency of antibody formation, is so slight as to be offset by the limitation in volume that can be given in this way as compared with the subcutaneous or intramuscular routes. This does not mean to say that administration of smaller volumes intradermally will not be effective—it merely says that there are quantitatively demonstrable immunologic advantages to the use of larger doses which can be given more readily either intramuscularly or subcutaneously. The relative degree of response elicited by a small "booster" dose given intradermally or intramuscularly as compared with a larger dose given intramuscularly is shown in Figure 11.

Future Developments

Even though we have continued to study different methods of inactivation, there have been no developments in our laboratory, nor in any others of which we are aware, to indicate that there are improved ways of inactivating virus.

It has been said that the interval between destruction of infectivity and destruction of antigenicity is very critical and that extension of treatment time tends to impair potency. I should like to point out the extent to which antigenicity is retained during a period of overtreatment, after destruction of virus infectivity. This is illustrated in Figure 12 which shows (1) the rate of destruction of infectivity of each of the three strains of virus (Mahoney, MEF–1, and Saukett) and, by comparison, (2) the relative stability of the antigenicity of each, in the course of more than three weeks of treatment with 1:4,000 formalin, at pH 7.0, and at 37° C. It is evident that the Mahoney strain is slightly

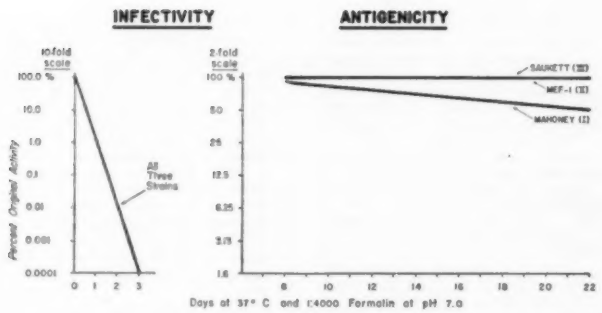


Figure 12—Rates of Destruction of Infectivity and of Antigencity of Three Strains of Polio Virus

less stabile than the other two, but this difference is not of practical significance. More importantly, there is no evidence, whatever, to indicate that a narrow or critical margin exists between destruction of infectivity and the beginning of destruction of antigenicity. However, further treatment under these conditions will, in time, impair antigenic activity.

The developments that can be foreseen now are technologic and in relation to the quantity of virus that can be obtained per monkey. Since the virus yield per tissue culture cell is relatively constant, the principal change can come from increasing the number of cells in the tissue culture flask. In our own laboratory the efficiency has been increased measurably—as is no doubt true in industry—and in this way we have been able recently to prepare vaccines that are, in general, more potent than vaccines prepared earlier. The problem is simply one of efficient tissue cultivation.

In answer to the question as to whether or not a "new vaccine" can be expected soon, it appears now that developments or changes for the immediate future will most likely deal with variations in detail rather than fundamentals.

Summary

The discussion of vaccine safety contained in this report may be summarized as follows: The safety test has a twofold purpose: (1) as a test of a given lot of vaccine, and (2) as a test of the manufacturing process. Since the information on the lot in question gives a positive answer only with respect to a relatively small fraction of the entire lot, the answer to the question of the safety of the remainder of the lot from which the sample is drawn is had from the results of the test of the manufacturing process. While the safety of a batch of vaccine is determined by the presence or absence of infectious virus in a sample submitted to test, safety of a much higher order of magnitude is assured by a continuing examination of the manufacturing process as reflected by consistency of performance.

The discussion of vaccine effectiveness reiterates the concept of relationship to antigenic mass and this as a function of potency and dose as well as spacing between inoculations. Data on the influence of age upon antigenic response are also presented.

The question of future developments is discussed briefly and reasons given why these will be of technologic detail rather than of fundamentals.

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"This (the Hill-Burton) hospital construction program brought about the addition of more than 100,000 hospital beds and more than 500 community health centers. Most of these hospital beds have been built in rural areas and their availability has attracted scores of young physicians to practice in those areas. It is also gratifying to note that of the two billion dollars which has gone into this program, more than two-thirds has been contributed by state, local, and private sources. In the true democratic fashion, the people have taken hold of this program and shaped it to meet their needs."

(Excerpt from the address by Harry S. Truman, November 17, 1955, on the occasion of the annual presentation of the Albert Lasker Awards at the 83rd APHA Annual Meeting, Kansas City, Mo.)

Health—Public or Private?

FRANKLIN D. MURPHY, M.D.

It is to be hoped that all in our association will read, and ponder, this profound reminder of the principles upon which our public services are based, in this way gaining for themselves some of the insight given to that fortunate minority of our membership who were privileged to attend the recent Annual Meeting.

It is well known to students of American constitutional history that our founding fathers were much preoccupied with the question of the balance of powers between the three branches of the government they were creating. They wished to build into our governmental mechanism a kind of automatic system of check and balance between the executive, legislative, and judicial branches of the national government on the one hand and between the national government and state governments on the other. With a sound understanding of political history and philosophy they labored to protect the American citizen from tyranny of any sort, then and for the future. They understood and accepted as real those human imperfections which sometimes tend to convert freely elected or appointed officials into men arrogantly unconcerned with the wishes and ultimately the freedom of the people. So concerned were they in these matters that, not entirely satisfied with the original constitutional safeguards, they shortly returned and nailed the issues home with a group of amendments, the Bill of Rights.

On the other hand, these founding fathers were practical men. They had in recent days seen the impact of breakdown in law and order. They mainly accepted Franklin's famous dictum that "they hang together or they hang separately." Thus, provision was made for national action and national policy in areas of common interest or need. In short, it can be said that our system of government was founded on the principle that the national government would act only in those situations where the states could not act or where action by the states would do violence to the nation as a whole. Because wise men understood that they could not read the future in these matters, they created a document, not cast in concrete but flexible—a set of ground rules, as it were, with built-in safeguards for personal liberty but rules which they knew would, perforce, be interpreted variously as the need and situation changed.

How wisely they built is attested to by the remarkable development of this republic through stresses of unimaginable force. Their faith in the ultimate "genius of the people" has been justified many times over. The ability of the American people to chart an essentially successful course through a century and a half of amazing scientific, social, and cultural change is the best of all proof as to the soundness of our constitution and to those who have been charged with implementing it.

That our national development has

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This Delta Omega Lecture was presented before the First General Session of the American Public Health Association at the Eighty-Third Annual Meeting in Kansas City, Mo., November 15, 1955.

been and continues to be attended by disagreement, sometimes loud and raucous, is to be expected. Quietude in a democracy is ominous and, to say the least, symptomatic of the fatal disease of political and intellectual apathy. For the resolution of our problems and the eternal search for the good life we need intellectual vigor and free and open debate on all matters, not dedication to the status quo and anti-intellectualism. But we must also have brought to bear reason, not cliché; objectivity, not sick prejudice.

In our time two great issues of relationship continue to be debated with vigor. The role of the federal government vis-a-vis that of state and local government was a burning issue in the constitutional convention and has remained so in varying degrees since. Generally speaking, I believe it to be an accurate statement that modifications in this relationship in favor of the federal government have come, in the main, through the force of enormous scientific, economic, and social change, unimagined 150 years ago, not by way of illogical assumption of power and influence on the part of politicans or civil servants, as some latter-day observers would have us believe. In this connection, the unwillingness or the inability of many states to shed themselves of horse-and-buggy constitutions and practices in favor of systems attuned to the realities and requirements of this rapidly moving twentieth century has not strengthened the position of state government in this eternal tug of war.

The relationship between government, at any level, and private enterprise is the other large area of continuing debate and often violent disagreement in our national life. In many respects, the foregoing comments about federal-state relationships apply in this matter, too. Certainly, it serves no useful purpose to try to make Thomas Jefferson's writings mean all things to all people 150 years and an atomic age after they were written. We can only say that he was an intelligent, thoughtful, and practical citizen who was dedicated to human liberty and did not really fear the future. In my personal opinion, he was a liberal in the eighteenth century and he would be a liberal in the twentieth century, albeit not in the sometimes latter-day perversion of meaning of the word "liberal."

Be that as it may, we can be sure that the founding fathers meant for man to be the master of his government at all times. On the other hand, being wise and practical, I am sure they never intended that government stand silent while important problems concerned with the national interest went unanswered and unresolved. They fully accepted the propriety of governmental interest in and indeed obligation "to promote the general welfare."

Again, we must note that this relationship between man and his government could not avoid being affected by the swirling tides of change and technological and scientific progress. To think otherwise is not to think at all. And in no field is this more true than that of health. The Public Health Service, once almost entirely concerned with the health of merchant seamen, now exerts its influence directly or indirectly in every state and, indeed, in every home in the nation, as well as in broad reaches of the world. Does any dispassionate observer really believe that this is due to a planned central effort to meddle in the lives of our private citizens or compete with the private practitioner of medicine? Certainly not. The U. S. Government, through its appropriate arm, has simply and logically responded to the remarkable scientific advance of the past fifty years in the public interest, and to have done otherwise would have been inexcusable negligence.

As a matter of fact, this governmental

activity has represented no competition with private medicine, but has actually made the task of the physician more productive and therefore more satisfying. As a case in point, I invoke the Federal Hospital Survey and Construction Act of 1946, popularly given the name Hill-Burton. Stimulated by a real and measurable need federal effort, channeled usually through a state mechanism, has resulted in more and better medical care, thus benefiting citizen and physician alike. It has been a superb example of coordinated effort on the part of federal and state government working in concert with private citizens and often private institutions—all for the common good. In the absence of Hill-Burton some progress in necessary hospital construction would have been made but, without question, too little and too late.

These difficult and complex, but nonetheless interesting, times require ever more examples of this remarkable blend of public and private effort in resolving our twentieth century problems. This is as true in the health field as in any other. The American people, therefore, can get no satisfaction out of significantly divisive forces which tend to seed suspicion among the workers who labor in the vineyards of the public's health.

One major area of disagreement which, in my judgment, has done more to divide those who should be working together for better health, and with mutual confidence, is that of medical economics or, more plainly, insurance for medical and hospital care. That this issue should have gotten into the political arena was, I suppose, inevitable, but nonetheless deplorable, for in American political infighting the cliché or slogan too often is substituted for the fact. Be that as it may, the most unfortunate aspect of this matter is that conditioned reflexes have been created in American medicine which tend to hinder logical and necessary action on many health fronts. It is, I believe, vital that every effort be made to break down these reflexes and reduce suspicion to a minimum. This means the substitution of reason and logic for smear and counter smear. It is as reprehensible to declare that most physicians in private practice are concerned mainly with money as it is to suggest that most public health officers are power-hungry bureaucrats. Although I believe that there is little to be gained and much to be lost in creating a system of national compulsory health insurance, I nonetheless recognize the right and indeed requirement for our government to explore ways and means of strengthening our private system of medical care by peripheral and supporting action, if such seems necessary. I am sure many practicing physicians feel this same way, but the politically inspired bruises they have received in recent years still are not completely healed. They can take little comfort in some efforts designed to prove, irrespective of the facts, that voluntary health insurance cannot resolve much of the problem. The phenomenal growth of the voluntary programs, they reason, more than justifies all-out support; and is not the voluntary way always superior to the compulsory one, if the required results can be achieved?

As indicated previously, the excesses of this controversy have led to predictable suspicion and rigidity not in the public interest. I sometimes wonder, if in the climate of today even Hill-Burton could be implemented, in spite of its almost total acceptance in the light of experience. In broad reaches of our country the great opportunity of tying public health and medicine closer together has been available in the planning of new small and medium-sized hospitals in rural and semirural areas, thus creating a true medical center. That few such plans have come into being certainly does not reflect credit

on our capacity to think and plan cooperatively in the public interest. Other such examples could be cited to demonstrate mutual lack of confidence.

In the title of this statement I raised the question of whether health was a public or private matter. My answer is that it is neither and it is both. The intelligent private physician who thrills with pride in the remarkably increased life expectancy of the twentieth century must know that the dedicated work of the public servant in environmental sanitation, for example, has been a crucial factor in this splendid record. And certainly the public servant should get vicarious pleasure out of the very great contributions made by our personalized system of medical practice supported by superior educational institutions and great research laboratories.

Great medical problems stand before us on the horizon, such as chronic disease and mental health. They are of enormous magnitude and represent a challenge to all segments of American medicine. These problems have many facets, scientific, economic, and social, and will tax our greatest combined efforts. They will require imagination and objectivity for their solution. New paths must be blazed (as indeed is the case in many other aspects of our culture today). Their effective resolution will be hastened as we blend public and private effort on the basis of logic and need. There may be times when we can afford the luxury of foolish, unproductive infighting, but this is not one of them.

Yes, our founding fathers intended that the citizen always be the master and government the servant. But they did not intend the servant should stand mute, paralyzed, and incompetent. They desired a useful and productive helper, always ready and able to serve the need, and under whatever the changing circumstances.

When in 1788 these wise men approved their handiwork, they hoped they had built for the ages, not for the moment—hence its flexibility, for without it the constitution would have long since split into a thousand ineffectual parts. They hoped they had "shackled the chains of tyranny"—hence specific comments and mandates about personal and civil liberty. But above all else they knew that in the long run the validity of their effort would depend on the character of man himself—the "genius of the people."

Let no one be confused. Our Constitution is no guarantee of the good life. It simply charts a way for a people to proceed through human history. And without application of good faith, reason, logic, unselfishness, and cooperation for the common good, it becomes nothing but an idealistic piece of paper.

International Aspects of Maternal and Child Health

Variation in Problems with Differences in Technical Development

LOUIS J. VERHOESTRAETE, M.D., M.P.H.

Some of the broad principles so strikingly delineated in this world-wide comparison of well developed and disadvantaged countries may be found usefully adaptable and applicable to the economically less favored areas of our own United States.

The present communication attempts to contrast problems of maternal and child health in those countries, limited in number, that have reached satisfactory levels of technical development with those at much lower levels. This seems justified, rather than to discuss countries at various levels of technical development, because of the enormous disproportion between these two different groups. Indeed, only one-fifth of the world's population [1–4] live in areas where the known infant death rate is lower than 50 deaths per 1,000 live births. Another fifth live in areas with rates between 50 to 100; while at least three-fifths of the world population live in areas with rates known or estimated to exceed 100 per 1,000 live births. Furthermore, the figures for many of the less developed areas are based on grossly incomplete reporting and we may assume that the true rates are even higher.

Children represent a major portion of the world population, of which approximately 35 per cent are under 15 years of age. The divisions by age, shown in Figure 1, give a rather striking picture of the contrast between developed and less developed areas. The latter have a much younger population with around 40 per cent under 15 years; while in the more developed countries the figure drops to 25 per cent, as the older population increases. These figures are influenced strongly by the difference between crude birth rates and death rates. In the most developed areas there are roughly 20 births and 10 deaths per 1,000 population, a natural addition to the population of 10 per 1,000 each year. In the less developed areas the figures are roughly 40–50 births and 20–30 deaths per 1,000 or an addition of about 20 per 1,000.

In Figure 2, showing the percentage distribution of deaths in the various age groups, the contrast in wastage of lives in childhood is even more striking. There are some sizable differences between the three continents, although these are obviously affected by the

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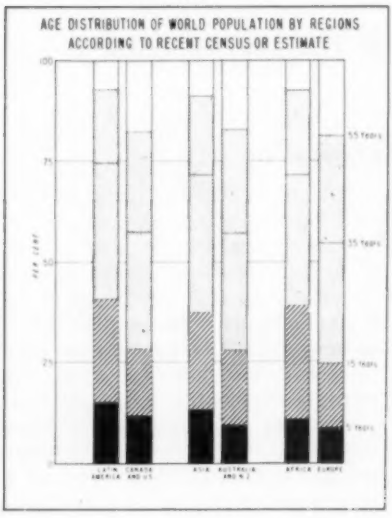
Acknowledgment is made of the valuable assistance of the Epidemiology and Statistics Sections for the analysis and presentation of data.

FIGURE 1



quality of available data. However, in spite of these disparities, the differences in the proportion of deaths below 15 years are enormous. Furthermore, the chart shows strikingly the excessive child loss in the age group from one to four years in the economically less developed areas, far greater than might be explained by the differences in age distribution of the total population. What really retains the attention are the very low figures of child loss in these age groups for the developed countries. This helps us to understand the enormous difference in expectation of life under these two different sets of economic conditions, for expectation at birth is around 68 years in the most developed countries and approximately 30 in the least developed areas.

An interesting example of parallelism between time and geography is shown in Figures 3 and 4. Figure 3 illustrates the distribution of age-specific death rates in the Netherlands [5] at four intervals within the last 45 years. The steady improvement, reflected throughout the life span, has been parallel to general economic betterment, higher standards of living, improved health conditions, and great advances in medical knowledge and public health organization. Figure 4 shows similar distribution of age-specific rates for four selected countries in the Americas [3, 6] at various stages of development. The similarity with the previous figure is obvious. One cannot stretch the comparison too far, but it is not unfair to assume that what has been achieved in the Netherlands with the passage of time may also be foreseen in the three Latin American countries.

Figure 5 gives the trend in both maternal and infant mortality for the last 40 years in three more developed and three less well developed countries.[1, 6-12] The most striking fact is that for both maternal and infant mortality the changes in the trends for these countries run approximately parallel, but at quite different levels. A significant point, however, is that around 1935 there was a definite change in the trend of the maternal death rates, whereas no such change was observed

FIGURE 2

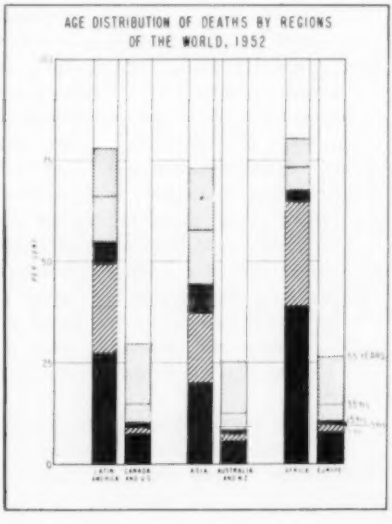


FIGURE 3

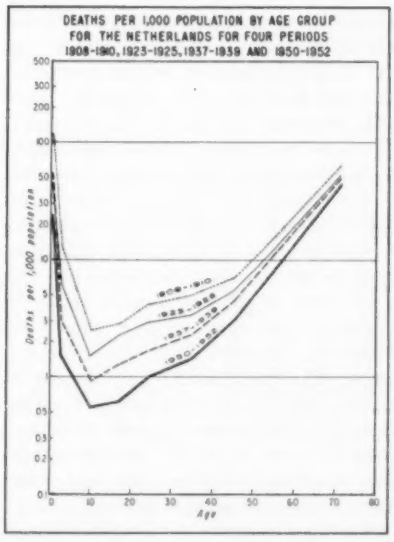
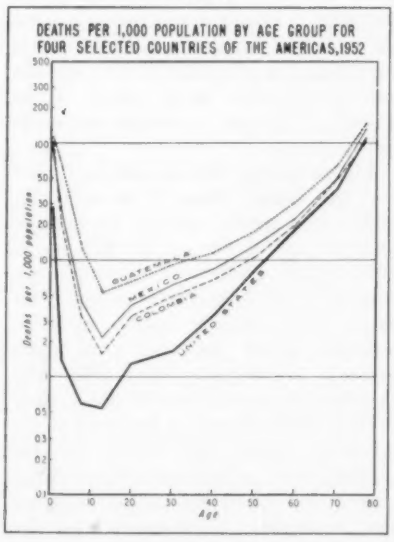
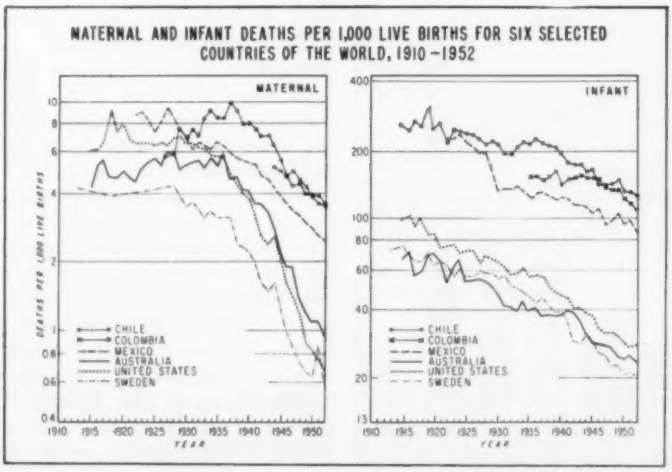

DEATHS PER 1,000 POPULATION BY AGE GROUP
FOR THE NETHERLANDS FOR FOUR PERIODS
1908-1910, 1923-1925, 1937-1939 AND 1950-1952
Deaths per 1,000 population
Age

FIGURE 4



in the infant death rates. We know that the change in the trend of maternal mortality was true in the more developed countries, although to a variable degree, in all three major causes of puerperal deaths—infection, hemorrhage, and toxemia—and was concomitant with great advances in chemotherapy and antibiotics, with better organized and more extensive prenatal care and with improved childbirth practices. The same kind of improvement in total maternal mortality is also seen in the three less well developed coun-

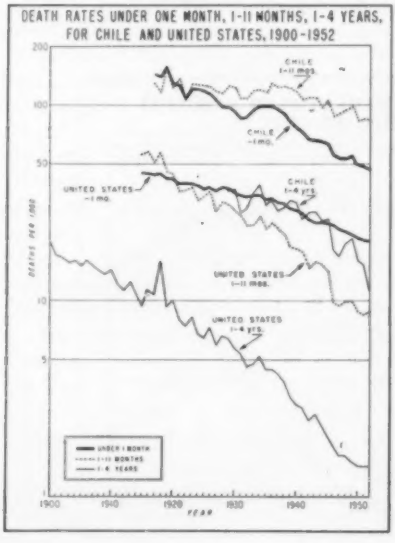
FIGURE 5



tries, but is not paralleled in infant mortality. This is not surprising, since the causes of infant mortality are more varied and less susceptible to specific and direct public health attack in the absence of general social and economic improvement.

Figure 6 shows the changes for Chile [8] and the United States [12] in mortality under one month, one to 11 months, and one to four years, for the period 1900–1952. Chile is one of the two countries of comparison selected because of its relatively reliable statistics, although many areas of the world probably are more representative. The fact that the mortality from one to four years in Chile is still at the level of the mortality under one month for the United States reflects the great difference in the conditions existing in these two countries. Furthermore, in the United States the neonatal mortality has long outgrown in importance the mortality from one to 11 months and has become the outstanding problem. In Chile, on the contrary, the mortality of from one to 11 months is still far above the neonatal mortality, thus indicating the need for further attack on the major causes of infant mortality that can be more easily reduced. Finally, the steep decline in the mortality of one to four years in the United States shows that under increasingly favorable circumstances the causes responsible can be almost completely eliminated.

FIGURE 6

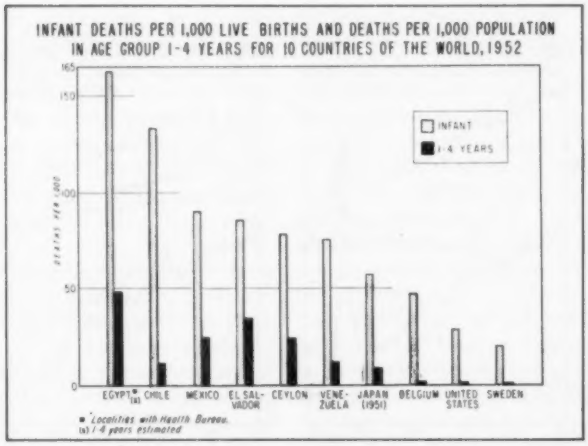


Another way of examining this contrast is to compare the ratios of the death rates in the first year to those in the next four years of life, shown in Figure 7. In the United States, for example, the ratio is 20–1, while in a country like Ceylon it is only 3–1. The ratio becomes greater as both rates are reduced, thus supporting the deduction that mortality between one and four years is more readily reducible.

The major causes of death in these two age groups are further analyzed in Figures 8 and 9. The great reduction in countries of low mortality for ages from one to four has come in all major groups of causes—gastrointestinal diseases, respiratory diseases, infectious and parasitic diseases—all readily preventable and essentially dependent on environmental circumstances. The picture of infant mortality is a different one. Here, the same causes of mortality which can be controlled through changes in the environment have also been equally reduced in the developed countries; whereas causes responsible for neonatal mortality have only partially been diminished.

The extent to which environmental factors influence the mortality of selected age groups is strikingly illustrated by Figure 10, showing the changes in the Netherlands [5, 13] on various portions of child mortality as a result of the extremely poor conditions which developed in the last five months before hostilities ceased in Western Europe during World War II. The striking factor is that mortality under one week

FIGURE 7



was practically unchanged; whereas mortality in the other age groups and particularly those from one to three weeks, one to 11 months, and one to four years was substantially raised. Thus the mortality between one to 11 months was augmented well above the neonatal mortality, setting the Netherlands back in its infant mortality to the level of 25 years earlier.

Figure 11 illustrates further the importance of specific aspects of the general program on changes in infant mortality in Mauritius,[14] an island in the Indian Ocean with a population of approximately half a million. Intensive

FIGURE 8

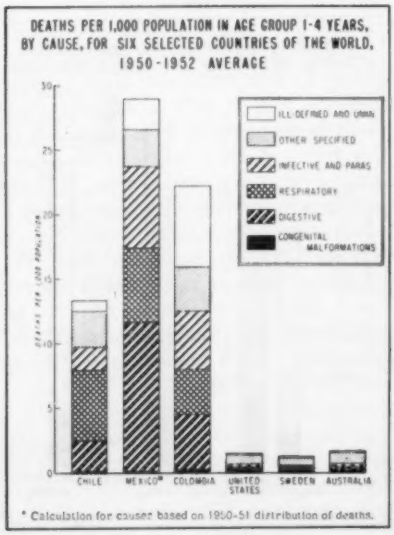


FIGURE 9

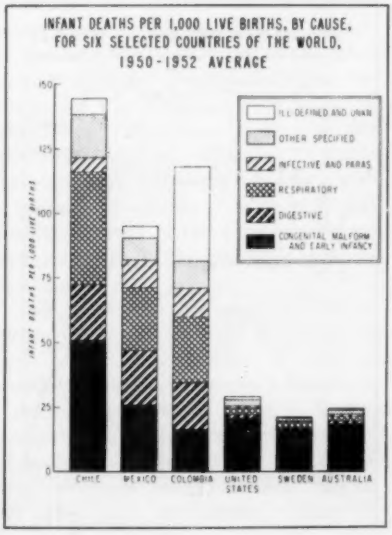
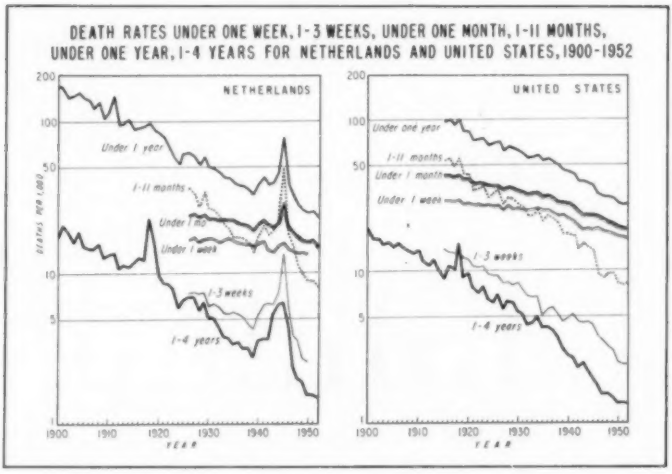


FIGURE 10


DEATH RATES UNDER ONE WEEK, 1-3 WEEKS, UNDER ONE MONTH, 1-11 MONTHS, UNDER ONE YEAR, 1-4 YEARS FOR NETHERLANDS AND UNITED STATES, 1900-1952
NETHERLANDS
UNITED STATES
Under 1 year
1-11 months
Under 1 mo.
Under 1 week
1-3 weeks
1-4 years
Under one year
Under 1 month
YEAR

and specific attacks on malaria resulted in a spectacular decline. Concomitantly a decline of substantial proportions is seen in infant mortality; whereas diarrhea and enteritis also show some decline but not as great as in the total infant mortality. Since it is known that the malaria program was the only serious change in the public health and medical services during this period it would seem that this is another example of beneficial effects of a specific program on infant mortality.

Finally, in Figure 12 the possible

FIGURE 11

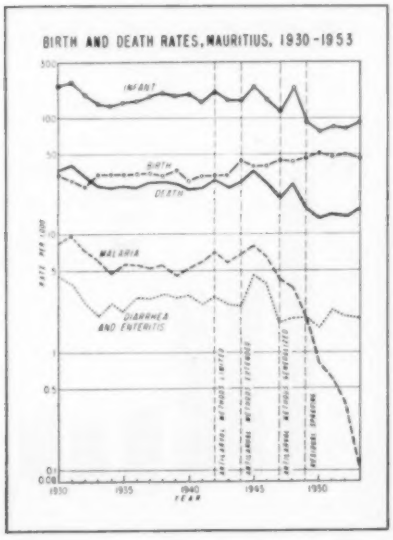
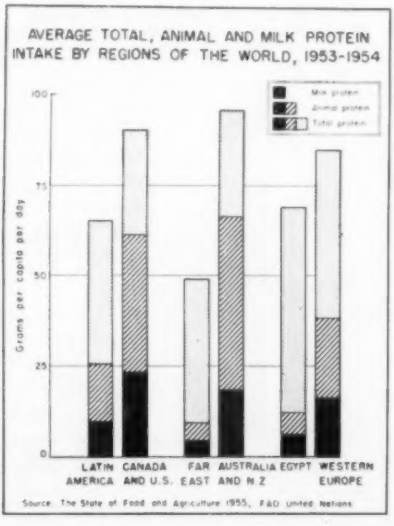


FIGURE 12


AVERAGE TOTAL, ANIMAL AND MILK PROTEIN INTAKE BY REGIONS OF THE WORLD, 1953-1954
Milk protein
Animal protein
Total protein
Grams per capita per day
LATIN AMERICA
CANADA AND U.S.
FAR EAST
AUSTRALIA AND N.Z.
EGYPT
WESTERN EUROPE
Source: The State of Food and Agriculture 1955, FAO United Nations

relationship of the facts already shown to malnutrition is suggested in the distribution of total protein consumption [15] and particularly of animal and milk protein for areas of the world. This gives some idea of the great disparity in the amount of available animal protein and particularly of milk. It permits one to understand the difficulties which occur in many areas during the weaning and postweaning periods and the development of protein deficiency disease, kwashiorkor. This situation is probably directly responsible for a portion of infant and early childhood mortality not acknowledged in the present statistical data of the causes of death and is certainly an important debilitating factor predisposing the infant and young child to the effects of the other major disease hazards.

Discussion

From the preceding data it seems obvious that in less developed areas the approach to increasing survival of the child population is closely linked to those programs that, over and above personal advice to the mother and the family, will aim at control of major communicable disease, and at improvement of basic sanitation and of nutrition. Ultimately, this is part of, and dependent on, a broad program of community development. While emphasis, therefore, will be on measures aiming at an increase in the survival of children beyond the neonatal period, these programs will, of course, also promote the survival of infants at any age succumbing from the same causes of death.

In contrast with this, the technically developed countries have programs which, with the disappearance of the problems mentioned before, aim essentially at control of developmental factors and of factors related to accidents of pregnancy and childbirth. In fact, in those countries the maternal and child health programs are focused on the perinatal period and are directed at saving more infant lives by preventive measures during pregnancy and at the time of childbirth. Such programs presuppose the existence of advanced general public health and specific maternal and child health services, and availability of highly skilled specialists, facilities, and technics, as well as the higher budgets which they require.

One must not forget, however, that in the economically less developed countries the portion of the perinatal mortality due to so-called inherent factors is, in absolute terms, higher than in the developed countries, even though less obvious proportionally. On the other hand, many of these factors will be influenced by improvement in environmental conditions resulting from the development of preventive programs. A typical example is the effect of malnutrition in increasing prematurity and fetal deaths and in decreasing average birth weights.

Contrary to the health problems in childhood, specific problems of pregnancy and childbirth are less directly dependent on safety of the general environment. This is certainly related to the fact that women as adults have already struggled through their bad environment and obtained a measure of adjustment. Programs aiming at the prevention of maternal mortality could therefore more easily be developed with a measure of success in technically less developed areas in the absence of great improvements in the general conditions of living.

The technically less developed areas of the world suffer in the expansion of their health program from a series of handicaps common to all. These are essentially a severe shortage of health, medical care, and sanitary facilities, and of professional and auxiliary personnel, with an extreme maldistribution between the urban and rural areas. Since the

lack of doctors and nurses is particularly serious for the maternal and child health program, an attempt is made to demonstrate this[16, 17] in Table 1. However, the table does not show the urban-rural maldistribution, nor does it give an idea of the magnitude of the problem in some areas, such as one doctor for approximately 70,000 population in Indonesia, or one graduate nurse for 46,000 population in Brazil. This situation will make it necessary in most cases to resort extensively to the services of auxiliary personnel, particularly in the nursing field, and calls for attention to the untrained village midwife whose services may be needed for many years.

Table 1—Estimated Population Per Doctor, Nurse, and Midwife in Areas of World * Grouped According to Infant Mortality

Infant Mortality	Population per		
	Doctor	Nurse	Midwife
Less than 50 per 1,000 Live Births	900	500	1,940
50–99 per 1,000 Live Births	1,600	2,600	4,400
100 + Over per 1,000 Live Births	4,100	8,100	18,400

* Areas with data available for infant mortality and personnel

In the urban areas, with some increase in resources and improvement of both facilities and efficiency of personnel, programs could rapidly develop on the lines in which health services have developed in the Western countries. At the rural local level, however, maternal and child health activities within the general health program will at present often have to be carried out through a team of workers with substandard levels of training, such as a semiprofessional nurse, an untrained village midwife, a teacher, a sanitarian, and with medical advice frequently available only on a visiting basis and further limited help from local community effort. Recognizing the limitations in personnel, maternal and child health programs in those areas should have well defined and limited objectives rather than trying to be all-embracing.

The following are suggested as possible points of emphasis. For the maternity care program there is first needed the extension of prenatal supervision to the largest possible number of pregnant women with increase in hospital facilities designed essentially for abnormalities of pregnancy and childbirth. Such a program includes the use of the untrained village midwife for normal deliveries by giving her additional skills in hygiene and promoting her supervision through the health center. According to the circumstances, this program may be combined with an increase in normal deliveries in maternity centers. However, this part of the program should not receive the major emphasis to the detriment of the other aspects.

For the infant and preschool age program, points of emphasis will include the acceptance of breast feeding as the surest life-saving device under poor environmental circumstances, both in terms of safe nutrition and the prevention of deaths from diarrheal disease. It is thus particularly important that, in our zeal to bring newer ideas of health and hygiene, we do not break down existing patterns of breast feeding. The nutritional problems of the weaning and postweaning period are most important in the underdeveloped areas and there is great need for improvement of the nutrition of the lactating mother in order to help her feed her child more successfully. Furthermore, early supplementary feeding with animal or vegetable protein, according to what is available, is necessary and often imperative, but should be truly supplementary rather than attempting to replace breast feeding

at the young age of five to six months.

The importance of diarrheal disease in the technically less developed areas is evident from the observation that out of 18 countries of the Americas [18] reporting rates in 1952, it was the leading cause of death at all ages in eight and among the first five causes in 12. We know that most of these deaths are of children under five years and it appears that the larger portion of these are due to specific infections, probably mostly shigellosis.

Recent evidence [19, 20] indicates that the increase in readily available quantities of water is a more important measure in preventing spread of diarrheal disease than achievement of high standards of water sanitation when only limited water is available. This knowledge will obviously influence future policies in rural areas. For those children who have acquired the disease the major factor contributing to their death is rapid dehydration. This knowledge should be imparted to all professional workers connected with the program. Teaching of simple methods of rehydration, such as early ingestion of water with sugar and salt, or of a simple glucose and electrolyte mixture, which can be recommended and applied with safety by semiprofessional and auxiliary nurses, might in a program in rural areas cut down the lethal effects of many cases of dysentery.

Although it might seem that health services for school children, in an age period of relatively low mortality, would have a lower priority in the less developed countries, schools do offer an unequalled opportunity to reach families, as well as to attack specifically prevailing diseases. Furthermore, the educational program in schools will be the avenue for betterment of understanding for healthier living by future generations.

So far the discussion has been restricted to the problems of survival and physical illness. However, the maternal and child health program goes far beyond this. It has taken a long time for the technically developed countries to realize the importance of a program aiming not only at survival and protection from physical illness, but at the stimulation of harmonious growth and development of the child to adulthood. This concept broadens considerably the program and makes it touch on some philosophical considerations with regard to the organization of communities upon which WHO's definition of health is based. Since our present knowledge of the psychological and emotional factors related to growth and development still needs much clarification it is necessary, in considering the situation in economically less developed areas, to proceed with caution. Indeed, all areas have definite patterns of child rearing and we should not apply too rigidly our present thinking to pass judgment on those that are very different.

Important drawbacks are frequently to be found, in terms of our present knowledge on prevention of illness, in the taboos associated with child rearing in many areas outside the Western culture. On the other hand, in the same areas good examples can be found of favorable circumstances associated with the close relationship between the mother and her young child and within the existing family pattern. Even if there is a temptation to exaggerate the mental health problems of the highly industrialized countries, because of the increasing emphasis they are receiving, there is evidence that the way in which the pattern of family life in the Western culture has evolved in these rapidly expanding industrial areas is producing a number of problems which we now have to meet.

The difference in the present patterns of living may explain why women in the underdeveloped countries, while definitely in need of learning the principles

of hygiene and in need of advice to free themselves from many taboos dangerous to the survival of their children, seem to have a greater capacity to adjust, without stress, to their pregnancy and prospective childbirth. They also show greater ease in establishing rapidly stable emotional relationships with their newborn infants, circumstances under which Western women seem, at present, to be more frequently in need of professional guidance and reassurance. Caution should therefore be exercised in promoting the patterns of child-rearing of the Western culture which are in fact continuously being reanalyzed by the social scientist in terms of their impact on family and society.

We seem to be quite sure of the ways in which to improve the conditions of physical health of mothers and children in the economically less developed areas. The question of child-rearing practices, which is recognized to be the fundamental basis for future harmonious development of the individual, draws probably equally good points in both the developed and less developed areas.

Summary

Problems in maternal and child health have been contrasted in countries in which live only one-fifth of the world population with infant mortality of less than 50 deaths per 1,000 live births and those countries in which three-fifths of the population live and have infant death rates exceeding 100 per 1,000.

Excessive mortality extends throughout childhood and is particularly evident in the age group from one to four years in the economically less developed areas. It is chiefly due to gastrointestinal disease, respiratory disease, infectious and parasitic disease, causes which are readily preventable and have almost completely been eliminated in the developed countries. Although not apparent in the statistical data, the influence of malnutrition on mortality is important.

Reduction of these preventable causes requires both intensive expansion of the general health program and development of specific maternal and child health activities. Services are particularly lacking in rural areas in the less developed countries where the maternal and child health program can be developed only slowly. It is therefore proposed that under those conditions, rather than to attempt an all-embracing program, attention be given to specific points of emphasis, such as acceptance of breast feeding as the surest life-saving device, stressing supplementary feeding of animal and vegetable protein, of the provision for readily available water to reduce the spread of diarrheal diseases, and prevention of such deaths by early rehydration.

The maternal and child health program goes far beyond methods for preventing death and illness, in which the highly developed countries are far advanced, but aims simultaneously at the stimulation of harmonious growth and development of the child to adulthood. In this respect, the less developed areas do not necessarily seem to be at a disadvantage.

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Public Health Business Management Seminars Scheduled

A third seminar in Business Management in Public Health is announced for January 23–27, 1956, by the University of Minnesota at its Center for Continuation Study, under the sponsorship of the Association of Business Management in Public Health. The basic principles of organizational and structural relationships, administrative communications, financial resources, management methodology, and human relations will be presented through the group discussion method. The seminar is designed to fit as closely as possible the expressed needs for knowledge of special technics and procedures of the registrants themselves.

Panel participants include:

Earl O. Wright, chief, Division of Administration, Ohio State Department of Health
Sam A. Kimble, chief, State Grants Services, Public Health Service
Ollie M. Goodloe, M.D., health commissioner, Columbus, Ohio
George E. Williams, M.D., psychiatric consultant, Minnesota Department of Health

J. B. Yutzy of the Public Health Service, recently returned from a public health administration assignment in Liberia, will be general chairman. Application and further information from the Center for Continuation Study, University of Minnesota, Minneapolis 14, Minn.

Recruitment of Engineering Personnel

HERBERT J. DUNSMORE, C.E., M.P.H., F.A.P.H.A.

Reported upon here is some practical experience in an area about which there has been much talk but very limited application.

It will come as no surprise that there is need for recruiting scientific and engineering personnel in the area of public health sanitation. This topic comes up as an important point of discussion wherever there is a gathering of professional public health engineering and sanitation personnel.

A nation-wide convocation, held in Chicago in February, 1955, culminated in the adoption of a resolution expressing deep concern for the serious shortage of scientific and engineering personnel and its imperiling effect on our national security. Many industries have envisioned a golden era of production and a continued rising economy that will place even greater demands on the use of such personnel. They foresee a coming crisis in the supply of engineers and have embarked upon employment policies which amount to the "hoarding" of technical and engineering personnel by offering high starting salaries and fringe benefits.

Several important technical reports have been made, such as the report on Local Health Units for the Nation by Emerson, and the Availability of Sanitary Engineers by A. P. Miller, which further point to the need for scientific and engineering personnel and the short supply. These reports, however, have not pointed a way to improve the situation. A look at the recruitment devices that have been used effectively in the past to attract such personnel offers some worth-while help. A search for further activities that each of us, as individuals, could do to aid in competing for such personnel is needed. We spend too much time talking among ourselves about how difficult the problem is rather than to take aggressive action for a reasonable solution to the problem.

Certainly, the high watermark in past experience of recruitment was the summer training program carried on for some 10 years by the W. K. Kellogg Foundation, in which junior and senior scientific and engineering students were given an opportunity to work for three months under the direction of an experienced public health engineer. This experience aided the candidate in making a decision to choose sanitation as a professional career. A similar idea has been developed during the last three years in the Pittsburgh Department of Health, except that instead of having funds available through a foundation, the three months' summer training positions were placed in the regular health department budget.

This training includes a two-week instruction or orientation period. During this period the trainees are handled as a class and much of the time is taken up in lectures and field trips. They learn about ordinances, standards, details of inspection, as well as the scientific reasons behind these requirements. The Public Health Service Field Training Station at Pittsburgh and the staff at the University of Pittsburgh School of Public Health participate very substantially in this phase of the training. A daily diary is kept by the students which is due at the first session each Monday. At the end of three months

they turn in a final report, equivalent to a term paper.

During the training program these trainees must be exposed to live problems and given the status and responsibilities of a regular employee. This cannot be done without creating some problems for the department, but on the other hand, if it is not done, the trainee will not actually get the feeling of the work. For example, last summer several restaurants were downgraded to a "C" as a result of inspection by trainees. One milk shipper was shut off. Two swimming pools were closed for a few days. In each instance these actions generated enough pressure to attract attention in the top administrative offices of the Health Department.

The program has so far been limited to juniors and only engineering candidates have been given such training: 16 civil, 4 chemical, and 4 industrial, for a total of 24. The State Health Department has participated in this program on a 50/50 basis.

Our greatest need at this time is for engineers but the plan includes training of students in other specialties, such as milk science, food technology, or sanitation. It was thought that, when the trainees returned to school for their senior year, they would discuss with other students and friends their summer experiences. This has proved very beneficial in "talking it up" in the schools. I think it is fair to say that prior to this program, the professors and students not only did not realize there were employment opportunities in the field of public health, but knew little or nothing about the type of work that was carried on, or what kinds of problems and challenges were to be met.

In fact, it may be said that the impression of public health practice held by the professors and advisers of these engineering students was anything but good. In other schools, such as dairy science, food technology, veterinary, and allied science courses even less is known about public health by the advisers. Some hold the erroneous concept that exists in too many quarters (along with the general public's unfavorable attitude toward public employment) that the work in sanitation is sub-professional. The short experience of only three years has changed that attitude to one in which there were twice as many applicants for training in 1955 as there were training positions available. We have attracted three graduate engineers to our staff and some, who now are in the military service, plan to join the department when they have finished their military obligation. Prospects for engineers in the department look good for the future.

These activities have had a salutary effect in other ways. They have stimulated our regular staff to keep up to date. The industries involved have benefited from the new information that has been brought to them and from the amount of time that the staff has been able to give to them. The Civil Service and Personnel Departments have upgraded entrance requirements for all beginning personnel in sanitation and this action was later followed by increases in salary and classification by the appropriating body.

If we, the leaders in this profession, agree that the job requires engineering personnel, then it is up to us to provide opportunities for professional growth and development, utilizing more fully their skills. Most important of all is the type of leadership and range of opportunities that these candidates are exposed to in their daily assignments. For example, any scientist or engineer who is permitted to continue to work only as

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a technician will not long be happy in his employment.

Clear-cut programs for advanced training must be found so that new staff members can grow in their professional experience to the top administrative brackets. More effort—through such organizations as the APHA and the national societies, such as ASCE—to upgrade the attitudes of the public regarding government employment must also be made.

With the rapid advancements in science important new technological problems are coming to the attention of public health engineers almost daily. To keep abreast of these advancements, ways and means must be found to attract the best scientists available to this work. Successful athletic coaches have long used a system of scouts and far-flung recruitment programs to attract to their organizations the best talents and abilities available. Large corporations—Westinghouse, the steel companies, Bell Telephone, and others—have provided many scholarships, particularly to children of their employees. There are other types of scholarships awarded on a scholastic basis to high schools. There has been some of this type of financial help available in a few fields of public health through such organizations as the National Foundation for Infantile Paralysis, the American Cancer Society, the National Tuberculosis Association, and the American Heart Association. I would recommend that the public health engineers try to develop a similar possibility, particularly for undergraduate study, through funds that might become available from foundations.

More attention to appearance, attitude, professional outlook will do more to attract the kind of staff member who is needed than the dollar sign. Opportunities are needed to participate in professional meetings and various types of training opportunities.

There have been many recruiting practices that have been effective in attracting scientific and engineering personnel to industry. For example, the June, 1955, graduating class of Carnegie Tech had a selection of 10 positions per graduate. One airplane company sent a luxury liner to fly as many of the graduates as cared to make the trip to its factory for a week end as guests of the company, during which time they were shown through the factory.

In discussing recruitment practices with the placement bureaus of three universities in Pennsylvania, it was found that most prospective employers post monthly listings of their current openings in university publications and send interviewers to spend at least a day or two on the campus to interview any interested candidates. They have brochures designed to portray the benefits of working for their companies; they have attractive salaries; they point out a clear-cut scheme for opportunities and advancements; and many have their own formal training programs to give beginning scientists a tour of duty. More importantly, they have a close personal contact with the staff of the placement bureau. Not all of the above procedures are available to each of us, but many of them are. Something can be done to attract scientific and engineering personnel to professional development in sanitation. The professional administrators in sanitation are the ones to do it.

The remark is often made that much of the existing professional personnel in sanitation started in this work by accident rather than by design. One cause of much of this is that the public and high school teachers and their students do not know what sanitation has to offer. The graduating high school student selecting law, medicine, or most types of engineering would seek out such a course purposely and would have a pretty good idea of what his future

Some Statistical Data on Engineering Colleges

For the Entire Engineering Profession

Population of engineers in 1950	400,000
Population of engineers in 1955	550,000
Students enrolled in engineering colleges in 1950	190,000
First year students enrolled in engineering colleges in 1950	52,000
Percentage of male students entering engineering colleges annually	16
Number of engineering colleges granting degrees	168
Number of major curricula offered (branches of engineering)	20
Total of faculty members in engineering	10,000
Average annual number of engineering graduates 1952 to 1955	20,000

In Civil Engineering

Total number of civil engineers (estimated)	100,000
Members of American Society of Civil Engineers	38,000
Colleges teaching civil engineering	137
Faculty members in civil engineering	1,500
Students enrolled in civil engineering	21,500
Annual graduates in civil engineering	3,840

activities and opportunities would be. This is not the case in sanitation, and this points to the need for a nation-wide approach to getting the facts on sanitation disseminated.

One helpful device would be an emblem that would be generally understood, such as those used by the public health nurses, Red Cross, and the medical profession. One can seldom pick up a newspaper or a magazine without seeing one of these emblems routinely carried in advertisements.

Too many of the public's misconceptions about sanitation are derived from our own discussions, in which we have measured the breadth and depth of filth instead of pointing the way to better health through optimum environmental conditions. Earlier discussions in these meetings have given some suggestions regarding the scope of the program and possibilities that could implement some of the above suggestions. I propose that a Committee on Recruitment be appointed, perhaps as a permanent committee of the Engineering and Sanitation Section, or a substitute agency be created whereby this important matter could be reviewed periodically and reported out to our members.

The most significant report that has been made available recently is that of the Executive Committee of the Conference of Municipal Public Health Engineers (August, 1955). This report indicates that there is a wholesome and significant increase (6–30 per cent) in salaries of engineers, sanitarians, and sanitation inspectors. However, it is silent on the numbers of scientific and engineering personnel working in health departments in 1951 or 1954; so there is no data as to whether this employment is on the increase or decrease. Significantly enough, there is a chart showing average age of engineers to be 34.8 years, sanitarians 38.4 years, and inspectors 45.6 years. This would indicate that, as an engineer gets older and more experienced in his profession, he leaves this field. Reports such as these need to be routinely reviewed, and the Municipal Conference should be en-

couraged to continue to make this survey, possibly enlarging it in certain areas and reporting back to the membership.

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Adding to the Pool of Qualified Personnel

"National Foundation Fellowships and Scholarships" of the National Foundation for Infantile Paralysis contains a summary description, with filing application dates, for the various types of student aid offered by the foundation. Postdoctoral fellowships are offered in medicine and the related biological and physical sciences, preventive medicine, rehabilitation, orthopedics, management of poliomyelitis, and psychiatry.

Predoctoral fellowships in medical associate fields are offered in the social sciences, health education, physical therapy and occupational therapy teaching; physical therapy travelships are also offered. Scholarships are offered in physical therapy and medical social work.

Division of Professional Education, National Foundation for Infantile Paralysis, 120 Broadway, New York 5, N. Y.

Retrospective and Prospective Methods of Studying Association in Medicine

COLIN WHITE, M.Sc., M.B., and J. C. BAILAR III, M.D.

To researchers, and their critics, who are disposed to bandy the words "retrospective" and "prospective" without too much thought as to their appropriateness, this revealing discussion of sampling method is especially commended. Others, too, will find the interpretations equally thought-provoking.

A field study of the possible association between, say, tonsillectomy and the development of poliomyelitis might take one of two forms: in the first type, subjects with poliomyelitis, and a suitable control group, might be questioned or examined to see whether at some time in the past the tonsils had been removed; and, in the second type, subjects from whom the tonsils had been removed, and a suitable control group, might be kept under observation in the future to see whether poliomyelitis developed. The one method is retrospective and the other prospective. Each has been used routinely in medical surveys, and, until recently, results obtained from both were regarded as equally valid, if the investigations were carried out with about the same amount of care and competence.

Today there is a general belief that the prospective method is more reliable.[1] This preference probably dates back to an important paper by Berkson,[2] in which he discussed some limitations of the use of hospital statistics for the study of the association between two diseases. Although Berkson did not use the terms "retrospective" and "prospective," later authors have come to regard the fallacy which he exposed as characteristic of retrospective investigations, and to find a solution to the problem by making the definitive survey, like a typical laboratory experiment, prospective in type. It is the purpose of this article to examine critically the division of surveys into retrospective and prospective, and to direct attention to a more fundamental method of classification, namely classification according to the type of sampling employed. The discussion is restricted to cases where one of the factors studied is a disease and the other a putative cause of the disease.

It should be pointed out first that there is considerable confusion regarding the terms currently used to differentiate the two types of study referred to above. Some of this is due to etymological factors. The word "prospective" is not a happy choice to describe the survey of someone who is collecting data in an unbiased way to test an hypothesis. It carries the implication that a particular outcome is hoped for. The poet or prophet may use "prospective" appropriately as the antonym of "retrospective" but not the scientist; for the latter we need a new word or a revival of the term "follow-up." In England a correspondent [3] of "Lancet" started an inquiry for a suitable new word. In the United States, authors have been fairly

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consistent in restricting themselves to the words "prospective" and "retrospective" and such confusion as exists is possibly due to the fact that these terms have been used to mean quite different things.

As an illustration, reference may be made to two instances where the words were employed with a meaning distinct from that used in the opening illustration of this paper. The first case is that of Paffenbarger, et al.,[4] who made two separate inquiries about the incidence of poliomyelitis among contacts of known patients. The original inquiry was made as soon as possible after notification of the case; it consisted of listing all known contacts, and was called prospective, since it was not necessarily known at that time which contacts would develop the disease. The second inquiry, which was of a retrospective type, occurred when the epidemic was over; the index cases or other informants were confronted with a list of the patients and asked to name anyone who had been a contact. The second inquiry, therefore, merely checked part of the information already collected; and, though the words "retrospective" and "prospective" were correctly employed, they do not in this instance have the special connotation currently given them by epidemiologists.

The other example of a different usage of these terms is that of Sartwell, who calls a study retrospective "if already existing and known cases of the disease . . . are to be related to a population existing at the time the cases had their onsets." Presumably an illustration of this definition would be the relating of cases of congenital cataract (and of controls) to two populations, one consisting of subjects whose mothers had had rubella during the pregnancy which led to the patient's birth and the other made up of subjects whose mothers had not had this complication of pregnancy. Two proportions would then be available for comparison: the proportion of cases of congenital cataract in the first group and the corresponding proportion in the second group. This description, however, gives one of the least favorable definitions of the retrospective method.

In the example just quoted, we can, under certain assumptions, determine whether there is an association between rubella during pregnancy and the development of congenital cataract in the child, and also what proportion of patients with congenital cataract were born of mothers who had had rubella during pregnancy. A much more hazardous estimate to make from these data, however, is an estimate of the frequency with which a mother who had had rubella during pregnancy would give birth to a child with congenital cataract, and Sartwell's definition of a retrospective study seems to imply that this type of estimate should be made. It is true that epidemiologists have attempted to use data of the retrospective type in order to make such estimates; but, as is shown below, this is feasible only in cases such as that described by Cornfield[5] where supplementary information can be obtained about the prevalence of the disease in the total population under consideration. It would, of course, be difficult to obtain a reliable figure on the proportion of pregnant women who contracted rubella during pregnancy.

The unsatisfactory nature of the terms "retrospective" and "prospective" may be shown even more clearly by citing from the literature an example of what has been called an "ex post facto" experiment or an experiment which was "prospective in retrospect." In the course of a trial of influenza vaccine, 750 men, who were essentially a random sample from a group of soldiers, were given injections of plasma so as to act as controls to those receiving vaccine. These men subsequently

became the subjects of an interesting separate investigation, as a number of them developed serum hepatitis.[6] Because of the role of the men in the trial of the influenza vaccine, the history of any respiratory infection prior to the hepatitis had been recorded carefully; and therefore a fourfold table could be drawn up, based on 750 subjects, who were divided into groups according to whether hepatitis did or did not develop, and also according to whether respiratory infection had or had not previously been noted.

Passing over the findings, which are not relevant to the present discussion, we note that this investigation is retrospective in the sense used by Sartwell, and indeed, in the ordinary etymological sense, in which "retrospective" implies, as Webster puts it, "directed backward or to the past." If, however, a separate random sample of 750 men were inoculated with plasma from the same batch and their clinical course observed in a typical prospective type of investigation, the findings would differ from those of the retrospective survey only in so far as uncontrolled, chance factors influenced the results. In other words, the distinction between retrospective and prospective methods of inquiry becomes irrelevant, and what matters is the method of sampling. If this is of the same random type in the two cases, the same results would be expected.

Methods of Sampling

The population from which the sample is to be drawn in problems of the kind under discussion may be represented by the following fourfold table.

	Individuals with Disease B	Individuals without Disease B	Total
Individuals subject to putative causal factor A	(A B)	(A b)	(A)
Individuals not subject to factor A	(a B)	(a b)	(a)
Total	(B)	(b)	Total

In this table the lower case letters a and b denote absence of the corresponding factor A and B, and the use of curves indicates a class frequency, the class being defined by the letters inside the curves. Thus (a B) indicates the frequency of the class of people who were not subjected to causal factor A but who developed the disease B; and (A b) denotes the number of people who were subjected to A but did not suffer from B.

For the present discussion it is important to distinguish three separate methods of drawing samples from this population:

I. A random sample may be taken from the complete population. This may be conveniently done in the course of a prospective investigation but the same result may be achieved in the ex post facto type of retrospective investigation. There is a third possibility, where the investigation is neither prospective nor retrospective but contemporaneous, the classification being made at the time of sampling; for example the subjects might be divided at the initial examination according to sex and according to the presence or absence of color-blindness. It is a further criticism of the classification of surveys into retrospective and prospective that no account is taken of this important case.

With a random sample of the total population, one may: test the hypothesis of association between the two factors; estimate the proportions of (A) and (a) that develop the disease; and, finally, estimate the proportions of (B) and (b) that have been subjected to the influence of the putative causal factor. The data already cited on the outbreak

of hepatitis among 750 soldiers could be analysed in this way.

II. Random samples may be drawn from the groups (A) and (a). These two groups will not, in general, be sampled in proportion to their size. If they are, the case reduces to that previously discussed; but otherwise an important difference develops. When (a), say, is arbitrarily varied in size, the class frequencies (a B) and (a b) necessarily vary also. Hence the proportions of (B) and (b) that have been subjected to the influence of the factor A are also altered. Thus a valid estimate of these proportions cannot be made when the investigation is based on random samples of arbitrary size from groups (A) and (a) unless it happens that information is available on the relative size of these groups in the populations, so that they may be adjusted by weighting to reduce this to the method of sampling described in (I). It is still possible, of course, to make a valid estimate of the proportions of (A) and (a) that develop the disease. It is also possible to test the hypothesis of association between A and B, for this is a test of the equivalence of the ratios (AB)/(Ab) and (aB)/(ab), and as already mentioned, these ratios can be validly assessed. A fuller account of this method of sampling is given below.

III. The third method of sampling is to take samples from the groups (B) and (b), that is, from cases of the disease and from controls. The information about factor A might be obtained by taking histories, as in certain investigations of smoking and cancer of the lung, and the inquiry would then be classed as retrospective. However, the subdivision into (A) and (a) might be made on the basis of a physical examination to determine whether the tonsils are present, or on the basis of a laboratory examination to ascertain the blood group. In these cases the inquiry is contemporaneous but the conclusions as to what can be validly inferred are not affected by this fact. Once again it is the method of sampling that is important and not the time relations. This third method of sampling is described more fully below.

Second Method of Sampling

The second method of sampling is characteristically associated with prospective investigations, in which the investigator begins with random samples of two groups, one subject to the causal factor and one not, and watches for the development of the disease. Of the two estimates discussed above, the one which can legitimately be made in this case is ordinarily regarded as the more important. It follows a natural sequence in that the investigator proceeds from cause to effect; and the virtue of the follow-up method is that it provides a good estimate of the fate of subjects affected by the causal factor. However, there are circumstances where there is some interest in the estimate which cannot validly be made in the above type of prospective survey. This estimate reveals what proportion of those cases showing the effect has been subjected to the putative cause. It would often be of great interest to know for example, that although a certain factor was clearly associated with the development of a disease, some particular proportion of cases of the disease developed in the absence of this factor. For instance, it is well known that certain toxic substances may cause agranulocytosis, but it is also important to decide what proportion of cases of agranulocytosis are due to these known agents. A similar problem is the problem of estimating what proportion of cases of Parkinsonism are postencephalitic. These estimates cannot be obtained from prospective studies using the method of sampling now under discussion.

One consequence of this is that diseases of multiple etiology—and to the epidemiologist this probably includes all diseases—cannot be completely investigated by the follow-up of two randomly selected groups, one exposed to the causal factor and the other not exposed. Follow-up in this manner will reveal the effect of some specific factor or group of factors, and follow-up of the control subjects may show whether the disease can develop in the absence of these factors. The method, however, will not give a good estimate of the proportion of the total cases of disease that were subjected to the causal factor, except in the special case when there is information about the relative size in the total population of the two groups being followed.

If this is overlooked there may be discouragement of further research when the factor investigated explains the majority of cases but leaves unexplained a certain minority which are of great theoretical interest. For instance, follow-up of subjects with rheumatic fever might give the impression that streptococcal infection was an adequate explanation of recurrences of the disease. This may well be true; but such doubters as exist have probably been stimulated by evidence of a retrospective nature that not all cases can be explained in this way. If the doubters are correct, and some cases, too rare to occur consistently in the average follow-up study, are found to result from causes other than streptococcal infection, then this finding would have an importance in the understanding of the etiology of rheumatic fever quite disproportionate to the number of cases directly affected. Scientific theory thrives on the investigation of anomalous instances, and the follow-up method is an inefficient way of bringing them to attention; it is best adapted to the detailed and definitive study of factors which have already come under strong suspicion. This turns out to be convenient for other reasons, in that follow-up studies are usually expensive and should not be wasted in looking for leads. Although there are limitations, sometimes critical and sometimes relatively unimportant, on the retrospective method as a means of proving association, this method remains indispensable as a means of discovering association.

As a result of these considerations a cyclical pattern may often be observed in medical research, the cycle consisting of prospective studies, preceded and followed by studies based on a sample of cases of the disease. The two methods are complementary, and neither has a general superiority over the other. The interaction may well be illustrated by the investigations of the etiology of retrolental fibroplasia. This condition was first described by Terry [7] in 1942 and the announcement of the finding was followed by numerous studies which began with two groups, one of patients and one of controls, and sought by inquiry into the histories to elicit etiological factors. A typical investigation was that of Kinsey and Zacharias [8] who located patients by sending out letters to the parents or guardians of all infants who had a birth weight of less than four pounds, and who had been born during the previous ten years at the Boston Lying-in Hospital and the Providence Lying-in Hospital. When an ocular defect was reported the child was seen by an ophthalmologist who selected all the cases of retrolental fibroplasia. Information on possible etiological factors was then obtained from the histories at the hospital.

When the findings of this and numerous other related surveys were collated, it appeared that one of the important etiological factors was the administration of high concentrations of oxygen to premature babies. The investigators then turned to follow-up studies of this factor.

For example, Lanman, et al.,[9] carried out an experiment in which 86 premature infants were assigned at random to low or high oxygen therapy—an investigation which was justified morally in that there was great uncertainty as to whether the risk of damage to the retina from high concentrations of oxygen was counterbalanced by the risk of loss of life from withholding oxygen therapy. This careful prospective study was accompanied by numerous experiments on animals, such as that carried out by Patz, et al.,[10] which can also be regarded as prospective investigations. They had the effect of confirming in a very clear-cut way, the importance of high oxygen tensions in inducing the fibroplasia. But by this time some anomalous cases have been established: there are authenticated instances of retrolental fibroplasia in babies who have had no oxygen therapy at all.[11] The stage is set for a further cycle of research in which the case histories of certain patients with the disease might well provide a valuable lead.

The preceding account of prospective studies is based on the premise that random samples have been taken. This is a strict requirement if firm conclusions are to be drawn. As often happens in medical research, the investigator may act on the judgment that in a particular prospective investigation the samples will effectively randomize themselves; but he should recognize the risk involved in this decision. The epidemiologist preparing for a prospective survey of a chronic disease is in quite a different position from a laboratory worker planning an experiment. The latter sets in motion a sequence of events, the end result of which he desires to observe. The epidemiologist starts to look for the end result of a process that may have been going on for some time prior to the beginning of the survey; for instance, in studies of the effect of smoking on the induction of cancer of the lung, he might observe the last few years of a process which has been under way for two or more decades. The practical result of this is that at the time the sample is taken the population might be differentiated not only in respect of smoking but also, to some extent, in respect of precancerous and early cancerous changes in the lungs. Such differentiation would not bias the conclusions if random samples were taken; but it could conceivably do so if nonrandom samples were used, for if polarization into four groups has started to occur at the time of sampling, and the sampling is nonrandom, there is no guarantee that subjects will be drawn impartially from each of the four groups.

The risk of the fallacy described by Berkson is thus potentially present in prospective studies based on nonrandom groups. One may take this risk because of an a priori conviction that the sample will be effectively random, or one may use certain general safeguards which are discussed below in the account of studies based on case histories; but the risk should be recognized. Moreover there is common experience that bias may be present in nonrandom sampling whether one is aware of a reasonable mechanism for its operation or not. In a recent paper by Berkson,[12] the conclusion is drawn that a prospective study may show bias, but perhaps too much emphasis is put on a demonstration of a possible way in which the bias could arise.

An example may be given of a possibly misleading prospective investigation based on the follow-up of two groups not selected at random. Miller [13] pointed out that in investigating the relationship between tonsillectomy and recurrences of rheumatic fever "most authors have used the method of following up for a period of years a number of rheumatic cases and seeing what has happened to them in the way of recur-

rences after tonsillectomy. Some have controlled these results by a further series of cases without operation." We may ignore those investigations which did not include control groups, but the remainder, of which some instances are given by Miller, are examples of prospective investigations in which Berkson's fallacy might well be present, for in these studies there is no protection against the possibility that the operated and nonoperated groups might be biased in respect of the recurrence of rheumatic fever. The mere fact that the recurrence, if any, was something to be determined in the future is not necessarily a protection against such a bias; for although the observation concerning rheumatic fever would be made in the future, the stage might already be set, as it were, at the time of sampling, for either a recurrence or nonrecurrence. Ignorance on the part of the investigator as to what the outcome will be, protects him, if such protection is needed, from the charge of manipulating the results; it does not insure that the investigation will be unbiased, for this is determined by the facts of the situation. Neutral observers are helpful, or perhaps necessary, in eliminating bias; but they are never sufficient.

Third Method of Sampling

If the sampling used in the third method is random, then again the investigator may test the hypothesis that A and B are associated. However, the estimates which he may validly make are the reverse of those possible in the previous case; that is, he may estimate the proportion of (B) and of (b) that were subjected to the causative factor, but he may not estimate what is usually more interesting, namely the proportion of (A) and (a) that suffer from the disease. An exception to this last proviso occurs when there is additional information about the relative size of (B) and (b) in the total population; the net results would then be the same as in Method I.

It has often happened in practice, however, that the samples drawn under this method have not been random; they have usually been matched samples. If random samples of (B) and (b) can be obtained, they are just as adequate for testing an association between A and B as are random samples of (A) and (a). The problem is that cases of a disease and their controls are, under usual circumstances, most conveniently found among groups of hospital patients. Random sampling from those in hospital will be ineffective if this population itself happens to be unrepresentative, in relevant respects, of the population of interest. In such a case the question arises to whether the hypothesis of an association between A and B can be validly investigated. This question has most often been raised in connection with such hospital studies, though it is the same problem as occurs in prospective studies based on nonrandom samples from (A) and (a).

Some investigators settle this matter ex cathedra: if there is no obvious reason why the sampling should not be random, then it is accepted as random. This is most commonly done, in a deliberate manner, in prospective surveys, but Kraus [14] has applied the same reasoning to retrospective studies, accepting this method as valid if factor A is something other than a disease and does not appear likely, on the basis of background knowledge, to have a selective effect on the sampling. The degree of conviction aroused by this procedure will vary from one piece of work to another, but, of course, will always be less than it would be if there were no need to validate the sampling by means of judgment.

A more objective method of checking this point is that used by Doll and Hill [15] in their retrospective survey of

the relationship between smoking and cancer of the lung. The point is raised at this stage but the technic to be described applies equally well to prospective or contemporaneous surveys, and is, in fact, an elementary statistical precaution. It consists of using internal evidence about homogeneity of the data, the argument being that if independent sets of observations show agreement, the charge of biased sampling, though still possibly correct, is more difficult to sustain. Thus Doll and Hill had a control group which could be divided into various subgroups, such as patients with cancer of the stomach or large bowel, patients with diseases of the chest other than cancer, and patients who were wrongly diagnosed in the first instance as suffering from cancer of the lung.

In effect, this involves obtaining various estimates of the ratio (Ab)/(ab); and consistency among the different estimates leads to greater confidence in the findings. Lack of consistency is a warning of possible bias, though it could also mean that the causal factor is having an effect on some of the control groups. Sometimes, as in the investigation by the Medical Research Council [16] on "Social Conditions and Acute Rheumatism," the principle of the method is carried further in that there is subdivision of the group with the disease as well as of the control group. There are many instances where the control group used in a survey has subsequently been found to be misleading, but some at least of these mistakes could have been avoided if multiple, independent controls had been used. For instance, one investigator in Denmark found that relatives of patients with cancer of the breast had a higher incidence of this same cancer than a control group; but Busk [17] pointed out that the control value used was too low by comparison with official Danish statistics, and he suggested that there was either underreporting or unrepresentative sampling in the case of the controls.

The greatest problem in the use of subsets of control and experimental groups is a generalization of the difficulty referred to already. Just as factor A may have an effect on some of the control groups, so there may be various unrecognized confounding factors which make for lack of homogeneity among these groups. This variety would be welcome if the method of sampling were not on trial, because it would give a wider basis for any conclusions drawn from the survey; but if the sampling is nonrandom and variety is encountered, there is uncertainty as to whether it is an artifact or not. Success with this method calls for ingenuity in devising a number of independent ways of testing the suspected association; until this has been done thoroughly, the way should be left open for strategic retreat.

An objection has recently been raised by Neyman [18] to retrospective surveys on the ground that the data might be biased by the elimination from the study of all who died from the disease under consideration. The argument is valid, but of limited application. There are many instances where the required information could be obtained retrospectively about those who had died and many more instances where the methods are applied to diseases with negligible fatality rates.

In conclusion, it is pertinent to recall some of the successful applications of the method of basing an investigation on a series of patients and of controls. Examples from the recent past are the discovery of the relation of maternal rubella to congenital defects in the offspring, the relation of smoking to the development of cancer of the lung, and the effect of inoculations of various kinds in provoking poliomyelitis. A very interesting example is the discovery of the development of serum hepatitis after the administration of pooled plasma or other blood product contain-

ing virus B. Here the incubation period of from 60 to 160 days was so long that there was more chance of recognizing that many of the patients with hepatitis had been transfused than there was of seeing some of the transfused patients develop the complication of hepatitis. Once the link was suspected it was a relatively simple matter to arrange a prospective study or to find an appropriate ex post facto experiment.

In many cases where today we are used to regarding a particular disease as a complication or later manifestation of some earlier disease, it is interesting but natural to find that the connection between the two was established retrospectively. Thus in 1920 Marie and Lévy [19] reported that they had seen a number of patients with involuntary movements, tremor and mask-like expression, and that inquiry into the past history showed that all but one had passed through a febrile illness about two months previously; they could not fit the syndrome into the frame of any known disease. Within a year Barré and Reys [20] were reporting, on the basis of a follow-up study, that 20 per cent of their 101 cases of epidemic encephalitis presented symptoms of Parkinsonism. As a further example there is the case of Bouillard who in 1836 had extended the observations of Pitcairn and Baillie to such an extent that he was ready to state his famous "Law of Coincidence." In this law he linked rheumatic carditis with articular rheumatism, his most important evidence being that over half his patients dated their heart disease from an acute rheumatic illness.

Summary

There is a growing tendency to classify epidemiologic surveys into retrospective and prospective types and to show preference for the latter. In the present paper the classification is criticized, because (a) the word prospective is unsuitable on etymological grounds; (b) the classification is incomplete, since it does not include surveys confined to the here and now; and (c) what is most important, the classification is not based on the method of sampling, which is the critical feature in determining what type of conclusions may validly be drawn from the data.

An account is given of three types of sampling commonly used in surveys of the association between a disease and a putative cause of the disease. The uses and limitations of each method are discussed and illustrated. The conclusion is drawn that the various methods are complementary, and no one has a general superiority over the others.

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Salk Vaccine Dose Pattern Retained

At a meeting in Washington, D. C., held on December 2 at the call of the Public Health Service, conferees representing advisers to the Public Health Service and persons from a number of professional societies considered the desirable pattern of administration of the Salk poliomyelitis vaccine. Representing the American Public Health Association were Huntington Williams, M.D., commissioner of health of Baltimore, and James P. Dixon, M.D., commissioner of health of Philadelphia.

Among the questions considered was the possibility of giving only one injection to all susceptible individuals before administering the second doses.

According to the Washington Report on the Medical Sciences, Dr. Scheele stated the unanimous conclusion of the group as follows: "Although it is evident that the injection of one cc produces a marked degree of immunity, it was found that there is not enough scientific evidence on the duration of immunity after a single dose to lead to any recommendation for a change in the present dosage."

Laboratory Services in the Diagnosis of Leptospirosis

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In their conclusion, the workers remind us that "leptospirosis other than Weil's disease is widespread in North Carolina and, probably, elsewhere in the United States." For this reason the paper becomes of immediate interest to administrators and epidemiologists as well as to the audience addressed.

In the past two or three years, more and more requests have been coming to the North Carolina State Laboratory of Hygiene from physicians scattered over the state for Leptospira tests on human beings who, ill with jaundice, have not been known to be in contact with rats.[7] Similar requests reached the veterinarians for tests on animals, but there appeared to be no correlation whatsoever between the two sets of requests.

Leptospirosis is a disease distributed over the entire world, and long known to be endemic among animals.[1-4, 10, 19, 23, 24] Human cases contracted from animals and from infected waters have been known for years. The literature indicates that Weil's disease, formerly the best known form of leptospirosis, is prevalent in all areas of the world among persons who are in contact with rats or who work in the ground, such as trench diggers and subway workers.[1, 4, 10, 15, 19, 23, 24] In fact, in the United States, Weil's disease has seldom been reported except among such workers and then usually as isolated cases.

At first the number of human tests was very small, one or two a month, but this began to increase suddenly, and it appeared desirable to investigate the need for laboratory tests as one of the routine procedures at the State Laboratory of Hygiene. North Carolina's experience[7-9] may be that of the entire United States.

The number of reported cases of leptospirosis in man in North Carolina reached a maximum of ten in 1954 and in the preceding years had been always only one or two. The number of diagnosed cases of serum jaundice formed a second very small group of reported cases of jaundice, while the greatest number of reports were "infectious jaundice," a disease which included bacterial and viral hepatitis until 1952 when the title was changed to infectious hepatitis.

A survey of the reported cases of infectious hepatitis in 1954 showed these to be spread over the entire state with large numbers from those counties with diagnostic medical centers, and occasionally from other counties in which there was a well defined epidemic. In 1955 the number so far is approximately half with small numbers of cases being reported from a large number of

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counties throughout the state. All forms of infectious hepatitis are grouped under this single classification on the report form, and it appears from the results of laboratory tests that specific cases of leptospirosis must have been reported in the infectious hepatitis group.

Leptospira are difficult to grow and to maintain for antigens.[20] In fact it is one of the paradoxes of this disease that the organisms, which apparently remain alive for years in infected waters and can be made to grow in tap water fortified with serum, may disintegrate spontaneously without warning in the laboratory, or may remain alive without apparent multiplication. Serologic classification is the only method available for separation of strains.[22]

The organisms are extremely sensitive to acid and although excreted in the urine of a person or animal infected with Leptospira, are killed in the urine within a few minutes after leaving the body. For this reason culture of urine is unsatisfactory on specimens transported to a central laboratory. It is possible to obtain the organism by inoculating young guinea pigs, hamsters, or baby chicks with fresh urine or with blood and isolating the organism from the peritoneal washings and heart blood several days later.[6, 8, 13, 19, 21] These technics are standard and are found in all textbooks. They are not suitable for use with transported specimens but must be performed in a laboratory immediately adjacent to the patient.

On the other hand serologic tests are available consisting of the agglutination tests with killed Leptospira, the agglutination-lysis test with living motile organisms, complement-fixation test, the hemagglutination test, and a precipitation test.[6, 11, 14, 16, 18, 19, 21] Complement-fixation tests have been performed over a period of years with cultures of Leptospira, sonic vibrated suspensions of the organism, and more recently a new experimental antigen has been reported.[16] The choice of these serologic tests depends to some extent upon conditions in the laboratory performing the tests. Complement-fixation tests with sonic vibrated antigens and with cultures of Leptospira are known to become positive early in the disease and remain positive for some time, gradually becoming negative as the agglutination test and the agglutination-lysis test become positive. The latter tests, which show a good deal of correlation, become positive later in the disease and remain positive for a long time. There are on record no examples of positive tests for Leptospira found in individuals who have not been infected with the organisms before, or who are not ill with leptospirosis at the time. In other words, native antibodies to these organisms are not found.

Most specimens reaching the State Laboratory of Hygiene are taken from patients who had been ill for some time, many of them for two or three weeks before being seen by a physician. For this reason it was determined to perform agglutination tests in the laboratory and, when paired specimens were available, send these to the USPHS Communicable Disease Center for complement-fixation tests. The agglutination-lysis test requires the use of live motile organisms which, during a two-hour period, are first agglutinated and then lysed by serum containing antibodies. The tests should be read after approximately the same period of time and this is sometimes difficult to do in a busy laboratory. In addition, the use of living cultures introduces a certain element of danger in the laboratory. For this reason it was decided to use the agglutination test with formalin-killed Leptospira. Frequently positive results were checked with the agglutination-lysis test and specimens were sent to the Communicable Disease Center for comparison with both the

complement-fixation and agglutination tests.

Tests for leptospirosis were introduced into the laboratory in January, 1954. It was interesting to note the type of specimens which were received in response to this new service. Human specimens were obtained from persons with a diagnosis of infectious hepatitis, from persons with influenza-like diseases,[12] from veterinarians and from serologic surveys for other diseases. Occasionally icteric serums were removed from specimens sent in for routine agglutination tests and tested for leptospirosis with positive results.

The State Laboratory of Hygiene does not routinely test animal specimens, but serums were received from animals associated with human diseases. The newly established North Carolina Animal Diagnostic Laboratory occasionally referred icteric serums from animals in which the diagnosis was obscure.

Procedure

When Leptospira agglutinations were first offered as a routine procedure in January, 1954, four strains of Leptospira were used to prepare antigens for the agglutination tests. The organisms were grown in a modified Korthoff's medium for five days, killed with 0.3 per cent formalin, allowed to stand for 24 hours, centrifuged, and used after 48 hours. Other media are suitable.[17] These antigens remain satisfactory for from 10 to 30 days and are frequently tested for specificity and sensitivity with known negative and positive serums. Positive control serums consist of hyperimmune rabbit serums. These were prepared in the laboratory by inoculating rabbits subcutaneously in the back with a mixture of BCG, aquaphor, paraffin oil, and living Leptospira.[10a] Standard strains of Leptospira were obtained from the CDC and from the Division of Laboratories and Research of the New York State Health Department.

The four strains chosen were L. canicola, because of the high incidence of canicola infection among dogs; L. pomona, because of the high incidence of pomona infection in cattle; L. icterohemorrhagiae, the infective agent of classic Weil's disease, and L. autumnalis, the cause of Fort Bragg fever.[5] Fort Bragg is located in North Carolina.

Later eight other strains of Leptospira were used in an attempt to find out if infection with exotic strains was prevalent in North Carolina. These strains were: L. ballum, L. bataviae, L. grippotyphosa, L. hebdomalis, L. hyos, L. mitis, L. pyrogenes, and L. sejroe. No positive tests were obtained with these rare strains except in two instances. Serum of one patient agglutinated L. hyos in a 1:64 dilution. The titer persisted over a long period of time and was never explained. Occasional positive reactions which could not be repeated were obtained with L. bataviae. This strain apparently agglutinates spontaneously with greater frequency and less warning than the other strains. It appears that antigens prepared from L. autumnalis, L. canicola, L. icterohemorrhagiae, and L. pomona are sufficient for routine tests.

Of all the specimens tested, only one showed a high titer to L. icterohemorrhagiae, the positive tests being obtained with L. canicola and L. pomona, and to a slight degree with L. autumnalis. No high titer reaction occurred with L. autumnalis, even in specimens received from Fort Bragg area. Considerable cross-agglutination occurred between L. canicola, L. pomona, and in low titer with L. icterohemorrhagiae.

There was no apparent correlation between the number of cases of infectious hepatitis reported and the number of specimens sent in to be tested for leptospirosis in regard to location, age, sex, or color. In some counties reporting large numbers of "infectious

jaundice," no specimens were sent to the laboratory for tests for leptospirosis. In other counties which reported no cases of infectious hepatitis, specimens were sent regularly to the laboratory for tests for leptospirosis. During the course of the study, 63 veterinarians, meeting in convention, were bled for tests for Leptospira. All were negative. A survey of persons employed in a poultry processing plant and in a mattress factory was made for other purposes and the specimens were tested for Leptospira. In each group many were positive with L. canicola, L. pomona, or cross-agglutinated with both. Although many of these persons had been ill with influenza-like diseases and minor upper respiratory infections, none had been reported as infectious hepatitis. Further epidemiologic investigations are indicated in this group.

Paired specimens from 17 cases were sent to the Communicable Disease Center for agglutination tests. In 15 there was complete agreement. Of the two which did not agree—one test when repeated agreed with the findings of the State Laboratory. One patient, a young Negro boy, who showed a consistently high titer with L. canicola and whose tests have remained positive, never showed a positive test at the Communicable Disease Center. A few specimens have been checked by complement-fixation tests.

Results

Of the 441 specimens tested for leptospirosis, 109 were positive. The specimens were taken from approximately equal numbers of males and females with white males predominating (Table 1). The positive results paralleled these groups. The greater number of specimens were taken from age groups 5–9, 10–14, and 35–44. The highest percentage of positives were from age groups 5–9, 10–14, and 30–34.

Table 1—Lack of Correlation Between Reported Cases of Infectious Hepatitis and Leptospirosis and Specimens Sent to the Laboratory to Be Tested for Leptospirosis (Total, Color, Sex, Age)

			Color			Sex			Age Groups																
		Total	White	Other	?	Male	Female	?	0–4	5–9	10–14	15–19	20–24	25–29	30–34	35–44	45–54	55–64	65–74	75	?
Reported Cases	Infectious hepatitis	1,055	951	57	17	534	521		53	327	245	108	105	55	56	61	27	9	3	2	1
	Leptospirosis	11	9	2		6	5			5	4	1				1					
Serum specimens sent to laboratory for leptospiral studies	Total	441	138	28	275	135	126	180	3	30	26	12	6	9	10	19	15	1	4	3	284
	Positive for leptospirosis	109	49	7	53	47	34	28		13	13	3	1	2	6	5	2			1	63

Of the 109 positive serums, 29 agglutinated L. canicola, one L. icterohemorrhagiae, 36 L. pomona, and one L. hyos. The remainder showed cross agglutination as follows: one L. autumnalis and L. canicola; one L. autumnalis, L. canicola, and L. icterohemorrhagiae; four L. autumnalis, L. canicola, and L. pomona; two L. autumnalis, L. canicola, L. icterohemorrhagiae, and L. pomona; three L. canicola and L. icterohemorrhagiae; eight L. canicola and L. pomona; 12 L. canicola, L. icterohemorrhagiae, and L. pomona; 11 L. icterohemorrhagiae and L. pomona.

Table 2—Positive Tests with Various Strains of Leptospira and Human Serums

L. canicola	29
L. icterohemorrhagiae	1
L. pomona	36
L. hyos	1
L. autumnalis + L. canicola	1
L. autumnalis + L. canicola + L. icterohemorrhagiae	1
L. autumnalis + L. canicola + L. pomona	4
L. autumnalis + L. canicola + L. icterohemorrhagiae + L. pomona	2
L. canicola + L. icterohemorrhagiae	3
L. canicola + L. pomona	8
L. canicola + L. icterohemorrhagiae + L. pomona	12
L. icterohemorrhagiae + L. pomona	11
Total	109

As the disease progressed in these cases which showed cross-reactions, one strain took predominance over the others—in every instance L. canicola or L. pomona.

The occupation of most of the persons tested was not known. Among the positives however, 11 were school children. The rest were distributed in small numbers among housewives, caretakers, nurses, physicians, farmers, food handlers, morticians, and factory workers.

The high number of positive specimens is an indication of the widespread prevalence of the disease. If specimens had been tested from the 1,055 cases of infectious hepatitis reported, many more cases of leptospirosis might have been diagnosed (Table 4).

The 93 animals tested showed 69 positive tests with some degree of cross-agglutination, less than was experienced with the human specimens. Fifteen of 18 dogs were positive, 10 with L. canicola and one to a high titer with L. icterohemorrhagiae. The others showed cross-agglutination. Thirty-seven of 49 cattle were positive, one with L. canicola, 31 with L. pomona and the other cross-agglutinated. The remainder of the positive specimens were distributed between low numbers of swine, horses, and goats with one sheep and two mules being tested.

In regard to titers, reactions less than one to 32 were not reported but a repeat specimen was requested. Human titers usually ranged from one to 128 to one to 512 with occasional higher titers. Animal titers ranged from one to 256 to one to 4,096. One dog titer was above one to two million dilution.

Table 3—Occupation

	109 Positive Tests for Leptospirosis
Unknown	61
Housewife	3
Caretaker	1
Nurse	1
School Child	11
Physician *	1
Farmer	2
Food Handler	1
Mortician	1
Infant	1
Poultry Workers †	5
Hide Workers †	21

* 63 veterinarians tested were negative
† 100 tested in survey

Table 4—North Carolina

County Number of Counties, 100	Human				Animal	
	Infectious Hepatitis Reported	Lepto-spirosis Reported	Lepto-spirosis Sent in	Positive Lepto-spirosis Tests	Tests Sent in	Positives
Alamance	9					
Alexander	19					
Alleghany	1					
Anson						
Ashe	7					
Avery	1		2	2		
Beaufort						
Bertie						
Bladen	17		20	6	2	2
Brunswick		1	5	2		
Buncombe	1		4	0	6	4
Burke	10		16	9		
Cabarrus	3		7	7	1	0
Caldwell	90					
Camden	11					
Carteret	2		5	0		
Caswell	1					
Catawba	2		2	0		
Chatham	1					
Cherokee	12					
Chowan			1	0		
Clay						
Cleveland			4	2	2	2
Columbus	8		2	0	8	8
Craven	1		5	0		
Cumberland	67		1	0		
Currituck			1	0		
Dare						
Davidson	12				2	2
Davie	1					
Duplin	15					
Durham	40		21	6		
Edgecombe	2		0	0	2	0
Forsyth	28		5	3		
Franklin	6					
Gaston	10		2	0	10	7
Gates						
Graham	2					
Granville	2					
Greene	7		1	1		
Guilford	53		8	1		
Halifax	4		1	0		
Harnett	13		1	0		
Haywood	1	1			1	1
Henderson	1		2	0	4	1
Hertford	1		2	0		
Hoke						
Hyde						
Iredell	49		4	2		
Jackson	7					

Table 4—North Carolina—(Continued)

County Number of Counties, 100	Human				Animal	
	Infectious Hepatitis Reported	Leptospirosis Reported	Leptospirosis Sent in	Positive Leptospirosis Tests	Tests Sent in	Positives
Johnston	5				2	1
Jones	2					
Lee	16					
Lenoir	7		1	0	8	7
Lincoln						
McDowell						
Macon	2		1	1		
Madison						
Martin	18		2	2		
Mecklenburg	59		6	2		
Mitchell						
Montgomery	17					
Moore	2		1	0		
Nash	13					
New Hanover	16		5	3		
Northampton						
Onslow	15		1	0		
Orange	4		26	5		
Pamlico	4					
Pasquotank	7		2	0		
Pender	31					
Perquimans	7					
Person	2					
Pitt	18	9	46	22	4	4
Polk						
Randolph	5				6	6
Richmond	1					
Robeson	15		5	2		
Rockingham	10					
Rowan	73		1	1		
Rutherford	3		2	0		
Sampson	2					
Scotland						
Stanly	19					
Stokes	39					
Surry	25		1	0		
Swain						
Transylvania						
Tyrrell	1					
Union	1		100 *	27		
Vance	3		1	0		
Wake	37		15	2	3	2
Warren	3					
Washington	18		11	0		
Watauga	7					
Wayne	5		5	1		
Wilkes	14					
Wilson	20		15	7	1	1
Yadkin	2					
Yancey	1					
?					25	15

* Survey

Table 5—Animals Tested for Leptospirosis

Animal	Total Specimens	Number Positive Specimens	Number Positive Specimens with Specific Strains of Leptospira						
			L. canicola	L. icterohemorrhagiae	L. pomona	L. canicola L. icterohemorrhagiae L. pomona	L. canicola L. icterohemorrhagiae	L. canicola L. pomona	L. icterohemorrhagiae L. pomona
Dog	18	15	10	1		2	3		
Cattle	49	37	1		31			3	1
Mule	2	1				1			
Horse	3	3	2					1	
Swine	15	7			7			4	
Goat	4	4							
Sheep	1	1			1				
Unknown	1	1	1						
Totals	93	69	14	1	39	3	3	8	1

Summary

These results indicate that leptospirosis other than Weil's disease is widespread in North Carolina and probably elsewhere in the United States. The type of infection appears to be mild, for the most part accompanied by a jaundice appearing late in the disease and caused by strains which are also infecting domestic animals.

Leptospirosis among domestic animals is frequently seen by veterinarians. When such a diagnosis is made, the owner and other human contacts of the animals should be alerted to the possibility of human disease.

Laboratory tests for leptospirosis, such as the agglutination test using killed organisms, are procedures which may be performed profitably by the State Laboratory as an aid in the diagnosis of leptospirosis. Difficulties in maintaining stock cultures and preparing antigens make the tests unsuitable for small laboratories.

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USPHS Regular Corps Examinations

A competitive examination for appointment of medical officers to the Regular Corps of the Public Health Service will be held in various places throughout the country on March 20, 21, and 22, 1956.

Appointments providing opportunities for career service in clinical medicine, research, and public health will be made in the ranks of Assistant and Senior Assistant, equivalent to Navy ranks of Lieutenant (j.g.) and Lieutenant. Entrance pay for an Assistant Surgeon with dependents is $6,017 per year, for Senior Assistant Surgeon with dependents, $6,918. Qualified officers are promoted at regular intervals.

Completed applications must be received no later than February 10, 1956. Application forms may be obtained from the Chief, Division of Personnel, Public Health Service, Washington 25, D. C.

What Does the Changing Picture in Public Health Mean to Health Education in Programs and Practices?

NELL McKEEVER, M.S.P.H., F.A.P.H.A., and
MAYHEW DERRYBERRY, Ph.D., F.A.P.H.A.

Discussed here are five insights that need greatly to be sharpened if modern-day health education is to achieve scientific stature. The behavioral sciences are the means through which these insights may be sharpened. Incidentally, health educators are not the only health workers who need the help of these sciences.

Four years ago some of us had the pleasure of hearing C.-E. A. Winslow, Dr.P.H., discuss the developments in public health education beginning with his appointment as director of a new division in the New York State Health Department called "Publicity and Education." In his words, the publication entitled, "Health News, gradually developed in the light of the knowledge of the times." That was 1914 when the picture was changing from one in which technical staffs working alone or with a small segment of the population could design health programs and manipulate the environment for the benefit of the people, to one in which people needed to be informed and take some action if such diseases as diphtheria, smallpox, and malaria were to be controlled.

Fitting into the pattern of this 83rd Annual Meeting of the Association, the Public Health Education Section turns its attention to meeting the challenge of today's picture and attempts to project it into the future. Perhaps, we should spend some time thinking about our heritage. Certainly, we would like to acknowledge our debt to the early leaders for their insight into change, for their vision into the future, and for their courage in exploring an untried area. We think, however, that these same leaders might be somewhat disappointed if we took too much time looking backward—our job is today and looking forward to tomorrow.

"In the light of the knowledge of the times," what do we see? We see our country no longer threatened by the dreaded epidemic diseases of a past generation. Through the extension of effective public health measures, the development of vaccines, serums and antibiotics, and better medical care, the deadly communicable diseases of the past have been brought under control. But they have been replaced by other problems—heart disease, cancer, mental illness, arthritis, diabetes, accidents, etc. These are the serious problems of today. They are the conditions to which we as public health workers must direct our attention if we are to fulfill our mission. As health educators, what is our place in this picture? What responsibilities are ours? Are we prepared to meet these responsibilities adequately? Or, are we still hoping that the methods of 1914, which were effective in solving the problems of that day, will solve the very different problems of today.

We believe that we can document some changes, such as: a greater understanding that an effective educational program must provide people with opportunities to learn their responsibilities rather than depending entirely on the transmission of scientific facts; more concern with helping people and communities determine their health problems and use their own ways to solve them; a growing recognition that individuals and groups are unique in terms of goals, experience, aspirations, and ways of working; and more emphasis on the kind of planning in which community members join with technical staffs in developing health programs. However, we are in an era where, more than ever before, improvement in health depends upon constructive action of individuals and groups. How much understanding of human behavior and the process of education have we introduced into the public health field? If this is our primary responsibility, how can we strengthen our efforts? And, difficult as it is, how can we anticipate the future to be ready to meet the demands effectively?

Health education looks to two broad disciplines for its practices: the natural and developmental sciences for its content and the social sciences for its methods and technics.

At the present time the chronic diseases take a tremendous toll. Knowledge regarding ways of preventing the chronic and debilitating diseases is limited. The actions which must be taken to prevent further disability after the diseases are recognized are still somewhat vague and ill-defined, although medical science has made possible the prevention of the more serious consequences of many of the chronic diseases. To a large extent, however, these preventive measures require changes in daily living, many of them unpleasant and some of them counter to social customs.

We may expect research in the natural sciences to provide data that will: (1) lead to the prevention of the degenerative process; (2) reduce and curtail disability; and (3) improve tools for the early discovery of degenerative diseases.[1] As this progress is made, the behavior that people will need to practice in order to benefit from the discoveries will change, probably toward behaviors that are clearer and more specific than those we now know. For example, a short time ago there was a list of rules to follow to cut down the risk of polio. Informing people about these rules was difficult. Observance of the rules was even more difficult. The discovery of the vaccine provides not only a specific course of action, but the action and the results are clearly correlated.

We now have asparagine for epilepsy and reserpine and other drugs being used in the treatment of some mental disorders. We are told that even though all the factors associated with coronary occlusion may not be defined, it is certainly not out of the realm of possibility that a substance can be found that will prevent the thickening inside the vessel. Perhaps, the day may come when we will be eating this substance in bread, drinking it in water, or taking it like a vitamin pill.

As scientific advances are made, they will be of benefit only if the findings of the laboratory can become meaningful to the people. Other "miracle" methods may be found but now, and perhaps for some time to come, changes in daily living are going to be necessary to re-

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This paper was presented before the Public Health Education Section of the American Public Health Association at the Eighty-Third Annual Meeting in Kansas City, Mo., November 15, 1955.

duce disability. Through education, can we lead people from limited to broader understandings and practices? Can educators help people form desirable patterns of attitudes and behaviors in line with scientific facts? Studies of the resistance encountered in gaining acceptance of new health and medical discoveries, such as the study of the opposition to the effort to fluoridate the water supply in Northampton, Mass., reported by Bernard and Judith Mausner,[2] can give us valuable clues as to what happens when it is taken for granted that people will act automatically on scientific evidence as presented.

Closely correlated with the increased importance of chronic disease, and yet a problem quite distinct, is the adaptation to growing old. As progress is made in preventing psychologic and physiologic deterioration, education must help to find a way to assist the senior members of society to make a satisfactory adjustment and an effective contribution while maintaining in society the kind of balance which will serve the best interests of all generations.

Accidents—home, industry, and vehicular—one of the most pressing problems of today, involve a myriad of factors, physical, psychologic, and sociologic. Much has been done in highway safety to improve road conditions, to standardize rules and regulations, and to provide adequate traffic controls. Automobile manufacturers are becoming more concerned and are advertising a multitude of safety devices, but, little impact has been made because the real problem is the behavior of operators and pedestrians. Here is where the attack must be made, unless you are willing to say that the day will come when engineering science will provide the answer in electronically controlled highways and cars to be accelerated, steered, braked, stopped, and moved from one lane to another from highway towers.

In the area of mental health it is doubtful that any one simple procedure will be found to develop full adjustment to one's environment. If we think of mental health in terms of a mature understanding of behavior, our own in relation to others, leading to a balance between ourselves and our environment, it seems unreasonable to expect any one miracle drug to attain and maintain that balance. We hope that medical and chemical research will provide answers to the serious mental disorders. We may also expect research to make more precise the steps involved in the development of personality patterns. In this age of reliance on outside resources to solve our problems and meet our needs it seems of utmost importance to place emphasis on the need for people to develop their inner resources, have confidence in their own worth and the worth of others, and be able to work through their problems by drawing on their own skills and abilities. This, too, is protection and, despite all the fundamental differences, perhaps we can draw an analogy between building this kind of community defense and that which we provide by maintaining a high immunization rate against diphtheria. Because each individual influences the adjustment of others, just as individuals transmit disease to others, it may not be utopian to visualize the day in which one can figuratively immunize against mental disease. What we mean is, if more and more people understand mental phenomena, become well adjusted, and behave accordingly, there will be less opportunity for maladjustments to develop in others.

In the social sciences we may expect rapid developments from research in unraveling the many facets of human behavior and their interrelated functioning. Emphasis must be placed on the need for more research in this area and financial support for the study of the complexity of human beings. But, have we as practitioners in our own

professional fields really utilized the research that has been done? Perhaps, we have been caught in this world of magic and we are seeking an all-purpose answer to the process of education, without thoughtful diagnosis of the problems involved.

Just as physicians are expected to perform diagnostic tests before treating a disease, and epidemiologists to spend the necessary time in diagnosing the problem of an epidemic before instituting community treatment, so the public health field has a right to expect from the health educator a diagnostic approach to the field of human behavior. That is why we raise the question—are we using the research that is already available to help us diagnose the problem? What are our goals? What are we moving toward?

In the WHO Expert Committee Report on Health Education of the Public [3] it is stated: "To accomplish his goal, the educator should have a first-hand knowledge and appreciation of the people with whom he plans to develop a health education programme. He should be familiar with the nature of the culture; the ways of life of the people; their goals in life; and their values, beliefs, traditions, customs and taboos with respect to health and illness. He should understand the objectives for which the people are willing to strive, and, conversely, the aspects of life that mean very little to them or that they are as yet unable to understand. Such understanding of the way of life of the people is important in setting the limits of any educational effort. What are the people willing and able to accept? What will they reject? What are the social and economic conditions which must exist before certain innovations or educational changes can be undertaken?"

Along the same line social science has pointed out to us that in effective education these are some of the things we need to diagnose:

1. The individual's behavior, his beliefs, his motivations, his goals, and ways of carrying these out. Hochbaum [4] in his paper "Why People Come to Get X-Rayed" says, "To us, early detection means better prognosis or shorter simpler therapy. But many people are found to worry less about prognosis or difficulty of treatment and to worry much more about other things; some about losing their jobs and income, others about the shattering of their careers, still others about the financial burden on their families, and the like. Many of these people do not feel that early detection of tuberculosis would do much to alleviate these problems. For them, detection of tuberculosis—early or late—may, with good reason, appear threatening rather than beneficial and, therefore, they tend to avoid being x-rayed."

2. We need to know the individual's attitudes and past experiences that facilitate progress or create barriers to change. Kelley [5] says, "We do not get our perceptions from the things around us, but that the perceptions come from us. Since they do not come from the immediate environment and obviously cannot come from the future, they must come from the past. If they come from the past, they must be based on experience . . . . The things around us have no meaning except as we ascribe meaning to them. They are nothing until we make them something and then they are what we make them. This can only be determined by what we are and where we have been (by our prior experience)."

3. We need knowledge of the group's goals, traditions, beliefs, practices, values, and cultures. Paul [6] cites the failure of a broad-scale publicity campaign in a Canadian town for the purpose of altering attitudes toward the mentally ill. "One of the concepts they had sought hard to communicate was that no sharp line divides the sane from

the insane, that personality types fall along a continuum running from the fully normal to the fully abnormal, and that released hospital patients are, therefore, not essentially different from other people and should be treated accordingly.

"But people in the community clung hard to their black-and-white concept of normality and abnormality. Never certain about their own sanity, they apparently erected a wall of defense that sharply divided the sane from the insane. In trying to undermine this popular attitude, the educators were arousing deep insecurities. The citizens showed outward apathy, attempted to withdraw, and ultimately expressed open hostility to the educators."

Paul says, "The lesson is clear. Before trying to change old health habits and ideas, it is wise to ascertain what they are and, more important, what psychological and social functions these beliefs and practices perform."

4. We need insight into the leadership-followership patterns established by the people. Sanford [7] describes leadership as a relation. "Psychological factors in the follower as well as psychological factors in the leader help to determine this relation." Closely identified with the leadership-followership patterns are the accepted patterns of communication.[8] Lingren [9] defines communication as "a process which is concerned with all situations involving meaning. Communication is thus concerned with an individual's attempts to express himself to others, to understand the events which occur around him and to understand himself." Lewin [10] puts emphasis on the gatekeeper and his influence in people's lives as a determining force in the broad area of communication and change.

5. We need to consider the objective advisability of change and the individual's or group's acceptance of change. In the Report of the Subcommittee on Evaluation of Mental Health Activities [11] the statement is made: "In considering the basic assumptions it is pertinent to ask by what right we ask change in others and how sound is our available knowledge." Robinson observes, "As we react against advertising methods in their use of fear and pressure and promise of total cure, we differentiate ourselves as professional groups—teachers, social workers, sociologists, psychologists, psychiatrists—dedicated to purposeful change of attitude by the fact of our primary concern for the individual. We have no axe to grind, no special interest of our own to further. Even so, we must stop to wonder at our own temerity and arrogance in asking change of others, we do not know what we think beyond today nor in what direction we are moving."

Introducing change, therefore, is something to be thoughtfully considered. The social anthropologists point out that the cultural patterns of people constitute a complex but firmly integrated whole. When change is introduced into one phase of living, such as health, it may completely destroy other phases of culture which provide real security to the people.

Again, we look to social science for clues to the ways the concept of change can be introduced with a minimum of difficulty and conflict. The Manual of Cultural Patterns and Technical Change [12] recommends that, "where specific technical practices are to be introduced into a culture or part of a society which has not hitherto used them, it is desirable to strip these technical practices of as many extraneous cultural accretions as possible. . . . Extraneous and culturally destructive effects can be avoided by stripping such scientific technique to the bone, to the absolute essentials which will make it possible for other people to learn to use it, and to handle it in a living, participating, creative way."

Such a diagnosis takes time, if it is

to be effective. We look to the day when social scientists will improve the instruments and investigative procedures to the point where precise determination can be made more readily. Meanwhile, how well have we used the methods already available? How effective have we been in using a diagnostic approach to human behavior?

Ahead of us lie comparatively unexplored areas: Civil Defense with its emotional overtones of death and destruction—with survival dependent to a large extent on the ability of people to act quickly and effectively in times of emergency; Suburbia with its problems of moving populations which brings with it the impact of large groups on administrative setups geared to other days and different situations; Medical Education with its demand for creative, imaginative experiences to enrich the quality of medical and community leadership; Patient Education in hospitals, clinics, and doctors' offices, in which ideal learning situations are often blocked by apprehensions and misunderstandings in emotionally charged situations; Alcoholism with its serious social and economic implications; Varying Population Groups and the educational and social problems accompanying integration; New Industrial Areas; Overcrowded Schools; Inadequate Housing; Limited Rehabilitation Facilities. These are the challenges.

How shall we meet them? We suggest that we meet them head-on, fully cognizant of the fact that we may stumble and fall; secure, however, in the knowledge that if we are willing to record our mistakes as well as our successes we will make a valuable contribution. Again, we owe a debt to the research field for this objective approach to problems.

We have placed emphasis on diagnosis as the first essential in determining program. Do we need to turn our attention to strengthening our profession? We suggest: (1) that we analyze the kind of training given to health educators in "the light of our knowledge" of the kind of job to be done; (2) that we work toward the day when we will have more training in the social sciences so our health-educators of the future will be comfortable and secure in working in this area; (3) that we think of training in a formal setting as only the beginning of a series of experiences; (4) that we plan carefully for that next step in career development by providing rich, creative experiences with mature guidance and supervision; (5) that we create opportunities for public health workers and social scientists to work together to solve practical problems; (6) that we test our programs step-by-step on an exploratory basis; and finally that we record our efforts carefully providing a firm foundation for the future.

Summary

The content of health education of the future is going to require changes in behavior. It is the responsibility of the educators to help adapt or find ways of applying the indicated behavior change in the way least upsetting to the established behavior pattern and within the potentialities of the people.

The methods will be much more precise depending more on scientific determination of the situation, the need for change, the barriers to change, the testing of method, and the objective measurement of behavior change. This means a closer working relationship with social scientists in practical field operations.

This has meaning for training. For health educators, more training in social science so they feel comfortable and secure working in the behavior area; for all public health workers, opportunities for understanding people, the role of the health educators and the role of social scientists; for social scientists,

opportunities to work with public health people in helping to solve practical problems.

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T. Duckett Jones Memorial Fund

The death in 1954 of T. Duckett Jones, M.D., brought to an end his career in medical research. A group of his friends have initiated the T. Duckett Jones Memorial Fund in the belief that the finest acknowledgment of his work would be the establishment of a fund devoted to advancing his own research objectives. The announcement was made in late October, 1955, to coincide with the posthumous award to Dr. Jones of a Gold Heart by the American Heart Association, the highest award of this national organization working in the field of heart disease.

The organizing committee suggests that research in rheumatic fever, which was the subject of much of Dr. Jones's own activity, be given priority but not an exclusive claim on its income by the fund's administrators. Several awards have been suggested that might represent the philosophy and professional interests of Dr. Jones. Among these are fellowships for promising young investigators and short-term support for investigators holding permanent positions to permit completion of studies or projects. These and contributions to the Fund, which are tax exempt, should be sent to the Helen Hay Whitney Foundation, 525 E. 68th St., New York 21.

Nutritional Status of the Aging

HAROLD D. CHOPE, M.D., Dr.P.H., F.A.P.H.A., and
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This extended inquiry into the possible relationships between circulatory conditions and nutritional status among elderly people proved productive of several highly significant findings.

The idea that diet is related to longevity and nutritional status to chronic disease is not new. Adelia Beeuwkes [1] in her review points out that Hippocrates supported the relationship. Roger Bacon (1214–1294), Thomas Elyot (1499–1546), and Francis Bacon (1561–1626) wrote essays on the subject. In 1881, Charcot published his "Clinical Lectures on Senile and Chronic Diseases" which placed emphasis on physiology rather than philosophical observations. In her review, Beeuwkes points out that "in 1909, I. L. Nascher suggested the term 'geriatrics' to cover a special branch of medicine dealing with old age and the diseases of the aged. In 1914, Nascher published the first textbook devoted in its entirety to geriatrics. . . . It was the only textbook of its kind and opened the way to progress in this field."

As each decade passes, it becomes more and more important that clinical and preventive medicine develop a deeper and more scientific understanding of the underlying etiological factors involved in the chronic diseases. Brightman [2] presents a table predicting the percentage distribution of the population in the United States.

Although there has been an increase in life expectancy in all age groups, the really dramatic increase has been in the very young. The expectancy of a person at age 60 is very little more today than it was 50 years ago.[3] The five leading causes of death have shifted from the infectious diseases to the chronic disease. "Aging need not be synonymous with degeneration." [4] Neither is it sufficient just to prolong life in our modern concept of health. Johann Heinrich Cohausen (1665–1750) reminds us "Some misguided enthusiasts have believed that by lengthening life they would confer a priceless boon on the human race; forgetting that it is not the length of the day which makes us love the summer, but the brightness

Shifts in Age of Population of the United States

Year	Life Expectancy	Proportion of Population Over 45 Years Per cent	Over 65 Years Per cent
1900	48	17	4
1950	67	28	7
1980 (predicted)		40	10

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of the sun, the beauty of the flowers, the singing of the birds" (Ibid.[1]). Certainly, it may be hoped that, as new scientific facts are gathered, people may not only lead a longer, but also a more functionally active and socially useful life. Dr. Walter L. Palmer[5] has expanded this thought in his chairman's address to the Section on Internal Medicine of the American Medical Association.

The study reported here represents an effort to add a "few more small stones" to the edifice of knowledge regarding nutrition and aging which is now a building. It was a joint endeavor by: (1) the U. S. Bureau of Human Nutrition and Home Economics; (2) the U. S. Public Health Service; (3) the Department of Home Economics of the College of Agriculture of the University of California; (4) the California State Department of Public Health; (5) the San Mateo County Department of Public Health and Welfare; and (6) the San Mateo County Medical Society. The basic study was carried on during the summer and fall of 1948 and early 1949, when 577 volunteer subjects over the age of 50 and apparently healthy were examined. The criteria for selection from 843 registrants were:

Health. Not on a special diet, not under the care of a physician within the previous three months, physically and mentally capable of participating, and subjectively in good health.

An equal sample of males and females —the final count was 280 males and 297 females.

An age distribution from 50 to 90 years, the final distribution being:

Age Group (Years)	Number	Percentage of Total
50–59	192	33.2
60–69	215	37.3
70–79	137	23.8
80–89	33	5.7

A sample form from all economic groups, the final distribution being:

		Per cent
Low economic	106	18.4
Middle economic	445	77.1
High economic	24	4.2
Unknown	2	0.3

Of the 106 low economic group, 47 were in a county institution for the aged and 59 were living in the community on small pensions or Old Age Assistance.

The investigation consisted of four parts.

1. Nutritional history including: seven-day recorded food intake; and general food history taken by nutritionist
2. Clinical history including: general medical history; and detailed systems history
3. Physical examination
4. Laboratory procedures including: blood (hemoglobin, serum protein, sedimentation rate, packed red cell volume, blood glucose, ascorbic acid, vitamin A, carotene, nonprotein nitrogen, free cholesterol, cholesterol total, leukocyte count with cell differential, erythrocyte count and serologic test for syphilis); urine (glucose albumin); chest x-ray; bone density determination (method of Dr. P. B. Mack); and vaginal Papanicolaou smears for all female patients.

The results of the laboratory and nutritional studies on this group have been reported by Morgan, Gillum, and associates of the Department of Home Economics, College of Agriculture, University of California.[6–11] These six papers with a combined bibliography of 129 references provide an excellent review of the current knowledge and the findings of these studies.

With such a large volume of detailed data available on the subjects of the 1948 study, it appeared that "longitudinal studies" or repeated examinations of the same subjects, might offer additional useful information. Therefore, in the summer of 1952 as many as possible (350) were re-examined using a somewhat less complex procedure.[12, 13]

Again, in the spring of 1955, a second follow-up was done on these subjects. The complete analysis of the data is not yet available, but certain relationships between nutritional status and health can be explored from the existing information.

Deaths

In the seven-year period, 1948 through 1954, 88 or 15.3 per cent of the 577 subjects had died. Of these 63 were males and 25 were females, giving a percentage death rate of 22.5 and 8.4, respectively. These deaths are shown classified into broad class according to the International Causes of Death in Table 1.

Although this series is very small, it confirms what has been pointed out many times:

The three major categories, heart and circulatory diseases, nervous system disease, and malignant neoplasms, account for 85 per cent of the deaths to date in this group of individuals over 50 years of age.

Heart and other circulatory diseases are the greatest killers of all of the diseases.

The death rate in this series from heart and circulatory diseases is three and one-half times greater in men than in women.

The death rate from heart and circulatory diseases is five times greater in those over 70 than in those from 50 to 69 years of age.

The death rate from nervous system disease is about equal in men and women, but two and one-half times greater in those over 70 than in those from 50 to 69.

In this series, to date the death rate from malignant neoplasms is three times higher in males than in females, but about equal for the two age groups.

The respiratory system death rate is three times higher in males than in females and seven times higher in those over 70 than in those from 50 to 69 years of age.

Since heart and circulatory diseases are responsible for 54 per cent of all deaths in the total universe studied and 58 per cent of the male deaths and 62 per cent of the deaths over 70 years of age, it would appear that the exploration of any relationships between nutrition and heart disease would be worth study.

Hypertension

High blood pressure is commonly associated clinically with cardiac failure and death. Table 2 shows that the percentage of deaths in the total series was four times higher in the patients with recorded (1948) systolic pressures over 180 mm of mercury than in those with systolic pressures of less than 140. In males the percentage of deaths was four and a half times higher in the hypertensive groups than in those with systolic pressures under 140. However, in women the percentage of deaths was only one and a half times greater.

Table 2 also records the diastolic

Table 1—Deaths by Selected Causes, Sex and Age—1948–1954

	Total	Sex		Age	
		Males	Females	50–69	70 +
Total in Group	577	280	297	406	171
Deaths	88	63	25	35	53
Deaths/1,000	152.5	225.0	84.2	86.2	309.9
Cause of Deaths by Group and and I.C.S. List Numbers					
Heart and circulatory (400–468)	83.2	132.2	37.0	36.9	193.0
Nervous system (330–398)	20.8	21.4	20.2	14.8	35.1
Malignant neoplasms (140–205)	26.0	39.3	13.5	24.6	29.2
Respiratory (420–527)	6.9	10.7	3.4	2.5	17.5
All other causes	15.6	21.4	10.1	7.4	35.1

Table 2—Deaths by Sex in Relation to Systolic and Diastolic Blood Pressure—1948–1954

	Total			Males			Females		
	Examined in 1948	Deaths No.	Deaths Per cent	Examined in 1948	Deaths No.	Deaths Percent	Examined in 1948	Deaths No.	Deaths Per cent
Total	577	88	15.3	280	63	22.5	297	25	8.4
Systolic Pressure									
Less than 140	115	11	9.6	67	6	9.0	48	5	10.4
140–179	300	35	11.7	148	30	20.3	152	5	3.3
180 and over	161	42	26.1	65	27	41.5	96	15	15.6
Unknown	1	..	....	...	..	....	1	..	....
Diastolic Pressure									
Less than 90	197	27	13.7	105	19	18.1	92	8	8.7
90–99	202	27	13.4	98	21	21.4	104	6	5.8
100 and over	178	34	19.1	77	23	29.9	101	11	10.9

pressures. Apparently diastolic pressures over 100 mm of mercury are not correlated with cardiac deaths to the same degree as systolic pressures over 180 mm of mercury. However, the death rates were slightly higher in those patients with diastolic pressures over 100 as compared with those with diastolic pressures under 90 mm of mercury.

Obesity and cardiovascular disease and cardiac deaths are frequently related. Armstrong, Dublin, Wheatley, and Marks [14] published a review of the statistics and an analysis of an insured group stating that at least one-fifth of the population of the United States is overweight. Our series of individuals over 50 years of age show 85, one-seventh of the group, to be 16 per cent or more overweight, somewhat less than the one-fifth cited by Armstrong. However, the relationship between overweight and cardiovascular deaths is clearly borne out by Table 3. This table shows that while the percentage death rates for all other causes are roughly constant in all three weight groups, those individuals 16 per cent overweight have a death rate from cardiovascular-renal disease nearly double that of individuals in the average weight group.

Cholesterol intake has also been re-

Table 3—Deaths Related to 1948 Overweight

	Total in Group	Deaths					
		All Causes		Cardio-vascular-Renal		All Other Causes	
		No.	Per cent	No.	Per cent	No.	Per cent
16 per cent overweight	85	16	18.8	13	15.3	3	3.5
Average weight	387	52	13.4	33	8.5	19	4.9
16 per cent underweight	93	13	14.0	9	9.7	4	4.3
Unknown	12	7	....	6	....	1	...
Total	577	88	15.3	61	10.6	27	4.7

lated to hypertension and arteriosclerosis. Gillum, et al.,[9] have reported from this same series of data that serum cholesterol for men was 241 ± 8 and for women 270 ± 8. It is pointed out that these differences cannot be ascribed to food intake since the intakes by men of cholesterol, fat and protein, all of which were found to exert some positive effect upon the serum cholesterol, were equal to or greater than those of the women studied. These same investigators found a correlation between high serum cholesterol levels (over 260) and overweight in men, but not in women.

Our data fail to sustain a relationship between high serum cholesterol and hypertension or cardiovascular-renal deaths (Table 4). In fact, the reverse seemed true; those subjects with the lower blood cholesterol levels suffered the highest death rates from cardiovascular-renal disease. Analysis of this relationship in two age groups—those under 70 years of age, and those 70 years or older—disclosed that mortality in the former group did not vary with cholesterol level; among person 70 and over, the higher the cholesterol the lower was the mortality.

Vitamins and Mortality

A suggestive relationship was found between mortality and the blood levels of vitamin A, niacin, and ascorbic acid (Table 5). The death rates in individuals with a low blood concentration of each, and of all these three vitamin factors, was higher than in those subjects with normal or high blood concentrations.

No significant relationship could be found between mortality and any of the following factors determined for the volunteer subjects: hemoglobin, blood glucose, blood creatinine, caloric intake, protein intake, fat intake, carbohydrate intake, calcium or iron intake.

The objective of any preventive program is not only to prolong life, but to try to make life as effective and useful as possible and, in older people, as comfortable as possible. Dr. Joseph H. Sheldon has stated that life is much fuller for aging people if four functions can be preserved or restored—ambulation, hearing, vision, and mastication. Our study provides data on one of these functions, mastication. Table 6 shows the number of teeth remaining in the mouths of the subjects examined by economic groups.

The high percentage of edentulous subjects in the low economic group, as compared with the high economic group, may perhaps be explained by both poor diet and inadequate dental care in the low economic group. In a previous paper [12] a very high correlation between

Table 4—Total Cholesterol Related to Deaths

		Deaths					
	Total in Group	All Causes		Cardio-vascular-Renal		All Other Causes	
		No.	Per cent	No.	Per cent	No.	Per cent
Mgm/100 ml Blood							
Less than 220	145	38	26.2	22	15.2	16	11.0
220–279	276	34	12.3	25	9.1	9	3.3
280 and over	148	13	8.8	11	7.4	2	1.4
Not determined	8	3	37.5	3	37.5	..	....
Total	577	88	15.3	61	10.6	27	4.7

Table 5—Blood Levels of Vitamin A, Niacin and Ascorbic Acid, and Mortality

	Subjects	Deaths	Rate
Vitamin A (International Units)			
Less than 5,000	158	34	21.5
5,000–7,999	160	25	15.6
8,000 and over	211	21	9.9
Not determined	48	8	....
Niacin (mgm)			
Less than 10	154	29	18.8
10–13	196	33	16.8
14 and over	179	18	10.1
Not determined	48	8	....
Ascorbic Acid (mgm)			
Less than 50	130	36	27.7
50–109	251	26	10.4
110 and over	148	18	12.2
Undetermined	48	8	....
	577	88	15.3

economic status and blood ascorbic acid content was demonstrated. Morgan [8] has demonstrated a relationship between blood, ascorbic acid, and number of teeth. Those subjects having ascorbic serum levels of less than 50 mgm were 50 per cent edentulous, subjects with 50–109 mgm were 40 per cent edentulous, while only 32.3 per cent of those with 110 mgm of ascorbic acid were edentulous. The maintenance of good ascorbic acid intake and blood levels may be important to support of good oral hygiene, not only the preservation of the teeth but also the prevention of serious gingivitis.

Discussion and Summary

This study of the nutritional status of 577 volunteer healthy subjects in relation to their health and life expectancy provides:

1. A living example of the close integration of various disciplines associated in the health field—including physicians, nutritionists, laboratory technicians, statisticians, public health nurses, institutional managers and the public—to work toward the solution of a complex problem.

2. Further evidence of the relationship between hypertension and overweight, and mortality.

3. A suggestion that among persons over 50 years of age, those with high levels of total

Table 6—Relation of Remaining Teeth to Economic Level

Number of Teeth Present	Total		Economic Group					
			Low		Middle		High	
	No.	Per cent	No.	Per cent	No.	Per cent	No.	Per cent
None	221	38.3	54	51.0	164	36.9	1	4.2
1–6	117	20.3	25	23.6	86	19.3	6	25.0
10–28	237	41.1	27	25.4	193	43.4	17	70.8
Unknown	2	0.3	...	.....	2	0.4	..	.....
	577	100	106	100	445	100	24	100

blood cholesterol have a lower mortality rate than do persons with low amounts of total blood cholesterol.

4. Indication that older persons with low blood levels of vitamin A, niacin, and ascorbic acid suffer a higher mortality rate than do persons with greater amounts of these substances in the blood.

5. Indication of poorer dentition among persons in low income groups than among those enjoying a higher level of living.

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Community Action for Health Careers

The Health Careers Project of the National Health Council, following the nation-wide distribution of "Health Careers Guidebook" and "Partners for Health," is moving into its next phase—community action "for helping youth explore new horizons" in health careers. As a stimulus to such action two new working documents have been prepared and distributed by the council.

"Fact Sheet" brings up-to-date what has been accomplished so far in the project and makes clear that progress is in the direction of increasing community action.

"Notes on Community Action for Health Careers" makes practical suggestions on local organization and activities. The "Notes" are planned for occasional distribution to pass along information on how various communities are developing "health career" awareness among their young people.

Both Fact Sheet and Notes are available without charge to interested national, state, and local organizations.

Health Career Horizons, National Health Council, 1790 Broadway, New York 19, N. Y.

Some Steps in the Process of Program Planning

MURRAY R. NATHAN, LL.B.

Of four papers on the general topic, "Recording and Evaluating Public Health Programs," two appear in this issue, the others will follow in the next. In the introductory paper the more important preliminary steps in program planning—identification of need and definition of objectives—are discussed.

Public health today includes undertakings so extensive and diversified that traditional patterns of practice no longer suffice. Major advances in public health practices have been achieved as a result of careful analysis of public health needs, clearly defined objectives, well thought out means of achieving those objectives, carefully recorded observations of significant facts, and critical analyses of the results obtained.

These elements together constitute program planning in public health. Program planning is a process for determining what an organization intends to do within a specified time interval. It is a part of the larger decision-making process known as administration.[1] Program planning is not a one-time-only undertaking but a continuing process of reciprocal accommodation between existing and contemplated programs. All of the phases of the process from identification of need to evaluation of results are intimately interrelated.

Program planning is action oriented. All too frequently planning is confused with studying, with preliminary survey, with data gathering, and with ideal notions of what ought to be done. While by no means excluding any of these, program planning is a more down-to-earth process.[2] Through this process an organization determines not just an abstract plan, but a plan of action with specific objectives—a plan that selects means for accomplishing those objectives and which makes provision for eventual appraisal of the results achieved, in the light of what was sought to be achieved and the purpose or reasons for which the mission was undertaken. It has been said that the alternative to program planning is chaos.

As a backdrop for the consideration of recording and evaluation in public health, it seems desirable to reflect on some of the more important steps in the process of program planning. The first step in program planning is to establish the need for public health action and to determine the dimensions of that need. We usually identify need in one or both of two ways. First, by what the public thinks ought to be done and, second, by what we think ought to be done.[3]

Indicators of need include pressure of special and local groups; expressed views of the chief executive of the municipality or state; editorials in the local newspapers; morbidity and mortality data; official policy expressed by the legislature; opportunism (where somebody offers us money to spend on the investigation of a problem); advances in knowledge by research and other means. It might be well to point out that an analysis of all these indicators of need eventually leads to a consideration of evaluation. One of the

results of evaluation may be the identification of additional needs. Thus planning is a continuous cycle where the last step in one phase may be the first step in the next.

It should be borne in mind that we are discussing the process of program planning as an administrative discipline or technic. As we go on we shall be dealing with words and terms to which I have assigned particular meaning. As Lewis Carroll's delightful character Humpty Dumpty said, "When I use a word it means just what I choose it to mean—neither more nor less." As used here, we shall say that purpose is the reason why; objective that which is sought to be achieved.

Within these meanings we can thus see that an important part of the analysis of a health problem in terms of the need for public health action is equivalent to stating the purpose of the program. The need may often be greater than our ability to meet it. The objective, then, is that segment of the road toward meeting the need which we think we can travel.

Having established the need for action, the next question is precisely what is the objective to be achieved?

Mr. Luther Gulick, now city administrator for New York City and one of the foremost authorities in the country in the field of public administration, was exceedingly active during the war in many of the emergency federal agencies which were created. Reflecting on his experience he wrote, "Military administration taught us a real lesson. With minor exceptions, no activity was initiated by the military without clear definition. A definition cast in terms of objective, timing and resources. No organizational unit was set up without a statement of its mission. The success or failure of any man or of any venture was measured against this specific statement of his mission."[4] As in the military, the success or failure of a public health undertaking must be measured against the specific statement of its mission. In program planning we call the mission the objective or the goal. The objective should be a definite, measurable aim of program action capable of being reflected in standards of performance.

It may be helpful here to recall a report of the Public Health Service evaluating the cooperative health programs of the Institute of Inter-American Affairs after 10 years of operation. The report said in part:

> By definition, a program is a pre-arranged plan. Also by definition, a plan is an arrangement of means or steps for the attainment of some objective. Thus, if the objective is not clearly defined, the arrangement of appropriate means or steps to achieve it will be difficult, and the program will lack precision and completeness. . . . The goal which the project aims to achieve should be precise and limited so that the accomplishment may be measured objectively.

The report goes on further to say:

> . . . post war objectives were general, and evaluation of success in attaining them was therefore more difficult.[5]

Here is where we usually encounter our greatest difficulty. It is not enough to say that the objective of a communicable disease program is to control communicable disease. There is not enough known about methodology to make such a broad, sweeping statement. Perhaps a case in point may help to illustrate: Let us consider inspection of pasteurizing plants. We know that certain communicable diseases may be transmitted through milk. We know

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that proper pasteurization of milk will establish a barrier preventing the transmission of the organisms causing these communicable diseases. We therefore require the pasteurization of milk and establish a procedure of inspection of pasteurizing plants. To assure proper pasteurization we say that a certain number and type of inspections are necessary. Is our goal in this instance the prevention of communicable diseases, the carrying out of a certain number and type of inspections, or is it to make sure that the pasteurizing plants adhere to standards? [6]

Let us consider that for a moment. Inspection may well be established as one of the ways to bring about prevention, but with the passage of time we may fail to take into account other factors, such as general reduction in the incidence of milk-borne communicable diseases and therefore less potential hazard of introduction of the causative organism into the milk in the first place; or we may not recognize the general acceptance on the part of pasteurizing plant authorities of uniform standard procedures in pasteurization; or the general improvement of pasteurizing plant equipment.[7] Now when we consider all these factors, we may perhaps question the continuing need for, say, one inspection per month. We may conclude that four such inspections per year are now sufficient. So carrying out a certain number of inspections is not our goal. Our real objective, in this case, is to make sure that the pasteurizing plants adhere to standards. Inspection is the means by which we achieve this particular objective; while the control of communicable disease is the purpose or need from which the objective was derived.

It may sound to some as though we are splitting hairs when we insist on separating purpose, or the need for doing something, from that which is to be accomplished or achieved. But again let me point out that we are dealing with a technical tool of administrative science and the more precision we can achieve the better. No matter how laudable the purpose or motivating force, the objective for a given unit of an agency, or of an individual, must be one which can be achieved by that unit or person. Can it be said that Dr. Jonas Salk had as his objective the prevention of poliomyelitis? It appears that it takes more than just the development of a vaccine to prevent disease—as the history of diphtheria clearly demonstrates. It is not until the vaccine is injected into a person that the act of prevention can be considered to have occurred, making due allowance, of course, for proper time interval and adequate response of the body to the immunizing agent. It is self-evident that the ultimate purpose of Dr. Salk was the prevention of polio, but in a more technical sense his objective was to develop a vaccine using non-neural tissue, which was safe, and which would produce an adequate antibody response sufficient to prevent paralytic polio. Having done that he can be considered to have achieved his objective. It becomes the objective of others to get the vaccine into people. Obviously, Dr. Salk himself could not have inoculated all who desired it.

How can we say that a public health agency in a given community or state or in the country at large has reduced the incidence of tuberculosis when we cannot isolate the part played by private physicians, the economics of the times, or a whole host of other factors? We can say, on the other hand, that when a public health nurse persuades a person who has only recently been found to have active tuberculosis to enter a hospital for treatment, that she has achieved one of her objectives, namely, to get such persons under care as soon as possible.

Confusion sometimes stems from the

failure to differentiate between the objective of a total program, such as for tuberculosis or cancer, and the objective of individual activities or means which go to make up the program. Each constitutes a different frame of reference. Each frame of reference has a mission or objective of its own. What may be activity or means at one level can be the objective at the next lower level in the design of a program plan.

Our purpose here was to discuss some of the more important steps in the process of program planning. The identification of need, including the establishment of the dimensions of the problem, and the determination of the objectives are, in my opinion, the two most important.

There are other steps, of course, which because of space limitations cannot be explored here. Daniel Bergsma, M.D., discusses another aspect in this issue and Evelyn Flook and Clemens W. Gaines will offer further considerations of the subject in a future issue of this Journal. Suffice it to mention just the identification of data to be recorded and the design of the reporting system; the control mechanism which makes sure that operations are going according to plans, i.e., that the whole program is moving toward the accomplishment of a stated objective—not the number of times the bird flaps his wings, but how far he has flown, and finally, the design of a plan for evaluation. Evaluation briefly is the appraisal of the effectiveness of the means in achieving the objectives and the comparison of what was achieved with the current characteristics of the need.

Summary

I have attempted to show that program planning is a process by which public health officials seek to prepare a course of action in an orderly and systematic way. Discussed are some of the more important steps in the process of program planning—identification of need and clear definition of objectives. I have attempted to show that these are the guides for determining what data are to be recorded and for establishing the base line for evaluation. An understanding of these essential elements is necessary to a consideration of the problems of recording and evaluation.

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A Method of Recording Public Health Programs

DANIEL BERGSMA, M.D., M.P.H., F.A.P.H.A., and LAWRENCE M. FRIEDRICH, C.E., M.C.E., M.S.P.H.E.

Described in useful detail are the four parts of the recording plan successfully worked out in one State Department of Health.

A few of the more commonly employed symbols used by persons professionally engaged in official public health are the words "program," "objective," "activity," and "technic." From the frequency and manner in which these words are used one might well assume that there was a general and mutual understanding concerning the exact meaning of these words. Unfortunately, most serious discussions concerning evaluation of public health programs reveal that the users of these symbols associate variable connotations with each of these words. This is especially true when the expression "public health" is used to modify such symbols as "programs," "objectives," or "activities."

The authors of this paper heartily concur with the concensus reached at the National Conference on Evaluation held at Ann Arbor, Mich., that a suitable group should be constituted for the purpose of selecting appropriate nomenclature and related definitions to reduce existing difficulties with semantics experienced during discussions concerning evaluation of public health programs. Until this worthy objective is achieved, we will use Webster's Unabridged Dictionary as our guide.

Accordingly, for purposes of this paper the word, "method," will mean "an orderly procedure or process"; the word, "program," will mean "a plan of future procedure"; the word, "objective," will mean "that toward which effort is directed, an aim or end of action, a goal"; the word, "activity," will mean "normal function or operation"; the word, "technic," will mean "expert method in execution of the technical details of accomplishing something"; and the word, "evaluate," will mean "to appraise carefully." To the authors, the title of this paper, "A Method of Recording Public Health Programs," means "An orderly process by which one may record a total plan of procedure directed toward specific, stated goals each designed to prevent disease or to enhance the health of our fellow human beings."

The method of recording to which we here refer is not conceived of as an objective or end in itself. It is used as a tool or an administrative instrument by which much evaluation is accomplished and by which a specific program is efficiently operated. It has been suggested that evaluation should be built into a program. With this we heartily agree. However, we further suggest that the use of a well designed method of recording and adopting public health programs can be, perhaps, the most potent of all evaluation procedures.

It is possible, of course, to discuss and outline a program in any given area of public health, to put the plan into action and, after an interval of

months or years, to evaluate as best one can what may have been achieved. At such a late hour one might find a lack of adequate base line data or a lack of suitable yardsticks or standards by which to measure progress. The programs of the past and present which were or are on record only in the minds of the respective program chiefs, or which are recorded only in general terms in essay form are most apt to demonstrate the previously mentioned defects and subsequently to frustrate the evaluator. On the other hand, a carefully designed technic for recording and adopting public health programs can, if faithfully executed, not only reduce to a minimum the subsequent difficulties of conducting the program, but also it can simultaneously serve as the most potent single exercise in achieving critical evaluation.

The New Jersey State Department of Health has designed one such technic. These public health program plans, when recorded as now designed, are documents containing four essential parts. The first part contains statements of specific public health needs in terms of lack of anything requisite or the presence of anything harmful to optimal human health, plus enumeration of any related problems, all in the most concise terms possible consistent with clarity. Pertinent statistical data are included. Tabular presentation is encouraged. The express purposes of Part I are: to establish the justification for the proposed plan of action; to define the situation clearly; and to provide a base line for subsequent measurement of progress toward a specific goal.

The second part contains the stated objectives of the particular program; the specific activities to be conducted to achieve each objective; and a designation of who, or which organizational component or agency, has primary responsibility for performing each particular activity. The express purposes of Part II are to predetermine exactly what it is intended to achieve; to state specifically by what efforts it is proposed to reach designated goals; to pin point responsibility for performance; and to provide the first broad guide lines concerning cost.

The third part contains general guidance for conducting the program, plus explicit, detailed procedures by which each activity is to be conducted. Part III is designed to provide all factual and procedural data necessary for an employee with minimum requisite training to conduct each of his activities correctly. It is intended to leave only the problems of carelessness or poor judgment as reasons for failure to perform the prescribed activity correctly.

The fourth part contains the adopted evaluation yardsticks or indexes by which it is predetermind to measure progress or successful achievement in terms of the program as a unit or of the respective objectives contained therein. This constitutes a series of built-in evaluation indexes which emphasize accomplishment rather than effort and which stress quality more than quantity.

In the space allotted we wish to discuss the inevitable evaluation aspects of this recording technic and program adoption procedure and to summarize some of its numerous corollary benefits. Adopted objectives, when clearly stated, constitute a summary of the need or problem, a reflection of background philosophy, a declaration of intent or goal, and the indicated policy. The re-

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lated activities as adopted indicate scope; may further clarify needs; usually imply personnel, time, space, coordination, integration; and always imply procedure which in turn embodies policy. Success or failure is very often a matter of timing. To insure success or yield, public health activities need to be carefully timed both with respect to their component parts and to related activities or programs. When these relationships are kept clearly in mind during the program recording process and, further, when every program is carefully reviewed as standard operating procedure by every other program chief who might possibly be affected thereby, and when every difference of opinion concerning program content is settled by group decision in staff conference, long chains of evaluations or critical appraisals take place which are of tremendous value.

Three simple facts stimulate optimal performance and critical self-appraisal of any program writer when the method discussed in this paper is used. These are, first, that a prescribed format is used in which every item of every program has its assigned place and can readily be cross-checked by a reviewer; second, that all the colleagues, as well as superiors of any program chief, will in fact constructively, but none the less critically, review his program and in the last analysis determine by group judgment whether or not it is consistent, adequate, and practical; and third, that every person who participates in performing any part of the program, or who is affected by its operation, is not only free to send suggestions for improvements to the head of the department, but also each one is urged to contribute in this manner.

These factors are so potent that most program chiefs started with a very critical review of every item. They were asked initially to record what they were doing, using the prescribed method of recording the data. However, it appears that most, if not all, struggled valiantly to improve what they were doing before recording it for all to see and critically review. In some cases the accumulated good intentions of several years were heroically telescoped into a few months and, on occasion, wondrous things were performed. Finally, the first draft was ready for review. Every item was checked or questioned. Each objective, activity, assignment, procedure, and standard was looked at from various angles, including legal, administrative, and technical. Most programs were rewritten at least once or twice and some were rewritten three or more times before being found acceptable to all, or to a majority, and hence adopted.

This method of recording public health programs has a built-in revision process as well as a built-in preadoption and postadoption evaluation process.

Some corollary benefits derived from this method of recording public health programs include: a very significant training period for all personnel involved; a more realistic and logical approach to remaining problems; more efficient work performance; a sense of accomplishment with associated improved morale; greater appreciation of departmental problems and goals and of their true interrelationship to specific program activities. Personnel have become more aware that they are a vital part of a public health team and increasingly have learned how to be an effective part thereof.

Surveillance of Poliomyelitis in the United States in 1955

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Epidemiologic findings upon which an opinion about the safety and utility of poliomyelitis vaccine may be based are set forth clearly and convincingly here. This report will prove most helpful when hesitant parents or community groups turn to us for guidance.

The role of the Public Health Service in the poliomyelitis problems of 1955 may be grouped into three main activities: (1) the licensing of products and producers and the clearance of vaccines; (2) the administration of federal grant-in-aid funds and of the voluntary interstate program for the distribution of vaccine; and (3) the surveillance of the disease and the field evaluation of the safety and effectiveness of vaccines. The present report will be limited to the surveillance activities.

The National Poliomyelitis Surveillance Program was created by the Surgeon General of the Public Health Service on April 28, 1955, immediately after the recognition that cases of poliomyelitis were occurring in association with vaccine manufactured by Cutter Laboratories. The purpose of the program was to provide a clearing house for the collection, consolidation, and dissemination of all pertinent epidemiologic information regarding the poliomyelitis problems confronting the nation.

The Poliomyelitis Surveillance Unit was established in the Communicable Disease Center with headquarters in Atlanta, Ga. Cooperative arrangements were made for the direct exchange of reports with all states and territories and with more than 40 virus laboratories both in government and in academic institutions. A total of 42 epidemic intelligence service officers, including 29 physicians, 4 nurses, 6 statisticians, and 3 veterinarians were either assigned to full-time polio duty or alerted for first priority polio investigation, as needed. Funds were made available for diagnostic support of surveillance activities to the collaborating laboratories first through the Sectional Research Program of the National Microbiological Institute and after July 1, 1955, through the Communicable Disease Center.

Poliomyelitis Surveillance Reports have been issued regularly since May 1 to all state health officers, state epidemiologists, directors of participating laboratories, and many others having responsibilities in the field of poliomyelitis. News releases giving summaries of the data were issued from the Surgeon General's office. Much of the information collected by the Polio Surveillance Unit was used in the "Technical Report on Salk Poliomyelitis Vac-

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cine," issued June 10, 1955, and the "Report on Poliomyelitis Vaccine Produced by the Cutter Laboratories," issued on August 25, 1955. Opportunity is taken at this time to present a more complete account of the National Poliomyelitis Surveillance Program.

This report will consider two main questions. The first will be an epidemiologic evaluation of the safety of polio vaccines as used this year, including a documentation of the difficulties arising from the use of some vaccine manufactured by the Cutter and Wyeth Laboratories, and an appraisal of the safety of vaccines in current use. The second question will be a preliminary evaluation of the effectiveness of the vaccines as actually used this year.

The authors wish to emphasize that the data included in this paper were reported by the states and the participating laboratories. Their contribution is gratefully acknowledged.

Epidemiologic Observations on Vaccine Safety

The first concern of the Poliomyelitis Surveillance Unit was the prompt verification of reports to make possible an evaluation of the significance of the cases of poliomyelitis which were occurring among recently vaccinated children. Shortly, the occurrence of cases among family contacts of vaccinated children broadened the scope of the problem. The possibility of community spread from these sources also caused great concern, but fortunately this proved to be of relatively limited consequence. Thus, three types of vaccine associated cases were recognized, namely, vaccinated cases, family contact cases, and community contact cases.

The cases of poliomyelitis associated with Cutter vaccine are shown in Table 1 by state of report, type of association, and paralytic status. A total of 204 associated cases with 11 deaths have been accepted by the Poliomyelitis Surveillance Unit. Of these, 79 were among vaccinated individuals, 105 among family contacts, and 20 among community contacts. Three-fourths of the cases were paralytic. The case fatality rate was 5 per cent. The cases were concentrated in California and Idaho where certain lots of Cutter vaccine were provided by the National Foundation for Infantile Paralysis (NFIP) for first- and second-grade school children. Cutter vaccine was also used in school clinics in Nevada, Arizona, New Mexico, and Hawaii. The cases that occurred in small numbers in the other states were associated with vaccine that had been distributed in commercial channels.

The distribution of the vaccine provided by the NFIP is shown in Table 2 by lot number and state. The extent of usage of the commercial lots of vaccine is not known. The incidence of vaccinated cases and total associated cases by lot number is shown in Table 3. A total of 67 were associated with either lot 6039 or 6058. These two lots were used in Idaho and for many cases a distinction between the lots was not possible. Cases were associated with all but two of the other lots provided by the NFIP and with all but one of the lots distributed commercially.

The distribution of Cutter associated cases by interval from date of inoculation to date of first symptoms is shown in Table 4. The vaccinated cases are concentrated in the period 4–14 days; whereas the family contact cases are concentrated in the period 8–28 days which represents a double incubation period.

The three phases of the Cutter incident are shown graphically in Figure 1. On April 27, when only six cases associated with Cutter vaccine had been reported, it was observed that the dates of inoculation were concentrated in the early period after release of the vaccine, and the intervals from inoculation to

Table 1—Poliomyelitis Cases and Deaths Associated with Cutter Vaccine by State and Paralytic Status

State	Vaccinated Cases			Family Contact Cases			Community Contact Cases			Total Associated Cases			Total Deaths
	P	NP	Total	P	NP	Total	P	NP	Total	P	NP	Total	
Alabama							1		1 *	1		1	1
Arizona	1	1	2		3	3				1	4	5	
California	27	11	38	28	10	38	2	1	3 *	57	22	79	1
Colorado	1		1	2		2				3		3	
Connecticut		1	1								1	1	
Georgia	1		1	3		3 *				4		4	1
Territory of Hawaii	1		1 *	2		2				3		3	1
Idaho	17	3	20 †	28	8	36 *	4	1	5	49	12	61	4
Illinois	1		1							1		1	
Louisiana	1		1 *	1		1				2		2	1
Maryland				1		1	4	1	5	5	1	6	
Minnesota							1		1	1		1	
Missouri	1		1							1		1	
Montana				1		1 *				1		1	1
Nevada	3	1	4	4	1	5				7	2	9	
New Mexico				2	1	3				2	1	3	
New York		1	1								1	1	
Ohio	1		1	1		1 *				2		2	1
Oregon	3		3	3	1	4	1		1	7	1	8	
Tennessee				1		1				1		1	
Texas	1		1	1		1				2		2	
Virginia							1		1	1		1	
Washington	1		1	2	1	3	3		3	6	1	7	
Wyoming	1		1							1		1	
Total cases	61	18	79	80	25	105	17	3	20	158	46	204	11
Per cent paralytic			77			76			85			77	
Total deaths			5			4			2			11	
Per cent case fatality rate			6			4			10			5	

* Including one fatal case.
† Including three fatal cases.

NOTES: Table 1 includes all cases associated with Cutter vaccine which have been "accepted" by the Poliomyelitis Surveillance Unit through October 28, 1955. "Accepted" cases meet the following criteria: (1) All cases have been classified as bona fide polio by the polio reporting officer submitting the case; and (2) minimum essential data (county residence, age, sex, date of inoculation, date of onset, paralytic status, and manufacturer of vaccine used) have been included in the report submitted.

It should be noted that for the purposes of this presentation vaccine associated cases used in the tabulations were selected in the following way: (1) Vaccinated cases: all cases included had onsets before June 1, 1955, so that no cases with onsets more than 50 days after inoculation are included; (2) family contact cases: all cases included had onsets before June 15, 1955, so that no cases with onsets more than 65 days after inoculation of the vaccinated contact are included; and (3) community contact cases: all accepted cases are included without restriction as to date of onset. However, reporting of community contact cases was discontinued on August 1, 1955.

These data are not final; minor additions, deletions, and corrections are to be expected.

Table 2—Distribution of Cutter Vaccine by Lot Number and State

Lot Number	Commercial Inoculations	First Inoculations in School Clinics						
		Arizona	California	Hawaii	Idaho	Nevada	New Mexico	Total
5721			34,000					34,000
5927	*							
5928		18,000	25,000					43,000
5970		†	21,000					21,000
5971	*							
5972	*							
5973	*							
5974	*							
5975	*							
5976		7,000	21,000				12,000	40,000
5977			3,000	†				3,000
6037		11,000	20,000				32,000	63,000
6038		2,000	48,000	3,000		4,000	4,000	61,000
6039				2,000	20,000	7,000	3,000	32,000
6044	*							
6045	*							
6058				†	12,000			12,000
Total	*	38,000	172,000	5,000	32,000	11,000	51,000	309,000

* These lots distributed through commercial channels and exact usage not known.

† Less than 500 inoculations.

NOTE: Data for this table contributed in part by the National Foundation for Infantile Paralysis from reports from State Health Departments and by the Vaccine Activities Section, Bureau of State Services, Public Health Service.

first paralysis seemed short. These findings provided a basis for some epidemiologists to predict a substantial outbreak of 100, 200, or even as many as 500 cases among vaccinated children. Actually, only 79 cases were reported.

During the middle of May when the first cases among family contacts came to recognition, similar short intervals were also noted and the prediction was made that 100 or more cases would occur among family contacts. Actually 104 cases were reported.

No community contact cases came to recognition for 12 days after the first family contact cases were reported and then only in small numbers. It was not possible to predict the numbers to be expected and only 20 were reported.

Figure 1 includes only the paralytic vaccine associated cases. The predicted curves are based upon incubation period data reported by Bodian [1] from inoculation of Mahoney virus intramuscularly into cynomolgus macaques, assuming an even distribution of vaccinations from April 16–27.

One of the characteristics of the Cutter associated vaccinated cases was the correlation of site of first paralysis with site of inoculation. Similar findings have been reported by Bodian [2] in cynomolgus macaques. The data are summarized in Table 5. The similarity of the findings is striking.

Table 6 presents a summary of the laboratory findings from Cutter associated cases and their contacts. Isolations

Table 3—Poliomyelitis Cases Associated with Cutter Vaccine by Lot Number

Lot Number	Number of Inoculations	Vaccinated Cases	Family Contact Cases	Community Contact Cases	Total Associated Cases	Total Associated Cases Per 100,000 Inoculations
		Vaccine Distributed to School Clinics				
5721	34,000	0	0	0	0	....
5928	43,000	4	1	0	5	11.6
5970	21,000	0	3	0	3	14.3
5976	40,000	2	3	0	5	12.5
5977	3,000	0	0	0	0	....
6037	63,000	6	3	0	9	14.3
6038	61,000	5	4	0	9	14.8
6039 or 6058 *	44,000	21	41	5	67	152.3
Total	309,000	38	55	5	98	31.7
		Vaccine Distributed Through Commercial Channels				
5927	†	1	0	0	1	
5971	†	7	5	1	13	
5972	†	8	9	1	18	
5973	†	1	2	3	6	
5974	†	1	0	0	1	
5975	†	0	0	0	0	
6044	†	4	2	6	12	
6045	†	10	7	2	19	
Total	†	32	25	13	70	
Cases with data incomplete		9	25	2	36	
Total Cases		79	105	20	204	

* Idaho cases received either Lot 6039 or 6058.
† Exact usage not known.

of polio virus have been reported in association with about half the paralytic cases and about one-third of the non-paralytic cases. Type I virus has been identified in association with 100 cases and Type II and Type III virus on single occasions. Not included in the table is a report by Dr. John Fox of Tulane University of the isolation of Type III virus from a fatal vaccinated case from which a previous isolation of Type I virus had also been made.

These are the epidemiologic data which support the conclusion in the Cutter Report, ". . . the development of the disease in some of these patients was the result of the presence, in infective amounts, of live poliomyelitis virus in some distribution lots of Cutter vaccine."

The experience with Cutter vaccine naturally alerted all health officials to the possibility of other outbreaks of inoculation poliomyelitis. In May a small number of cases was reported from Pennsylvania in children who had recently received vaccine made by Wyeth Laboratories. Three cases had developed initial paralysis in the inoculated extremity. A special study was immediately undertaken. Additional cases were discovered in family and commu-

Table 4—Poliomyelitis Cases Associated with Cutter Vaccine by Interval from Inoculation to First Symptoms

Interval * (Days)	Vaccinated Cases			Family Contact Cases			Community Contact Cases		
	P	NP	Total	P	NP	Total	P	NP	Total
0–3	3	1	4	1		1			
4–7	36	3	39		1	1			
8–14	18	7	25	9	3	12			
15–21	1	6	7	20	3	23	2		2
22–28	2		2	26	10	36	5	1	6
29–35				6	3	9	4	1	5
36–42	1		1	7	2	9	4		4
43–49		1	1	5	1	6		1	1
Data incomplete				6	2	8	2		2
Total	61	18	79	80	25	105	17	3	20

* Interval from inoculation of vaccinated contact to onset of case used for all contact cases.

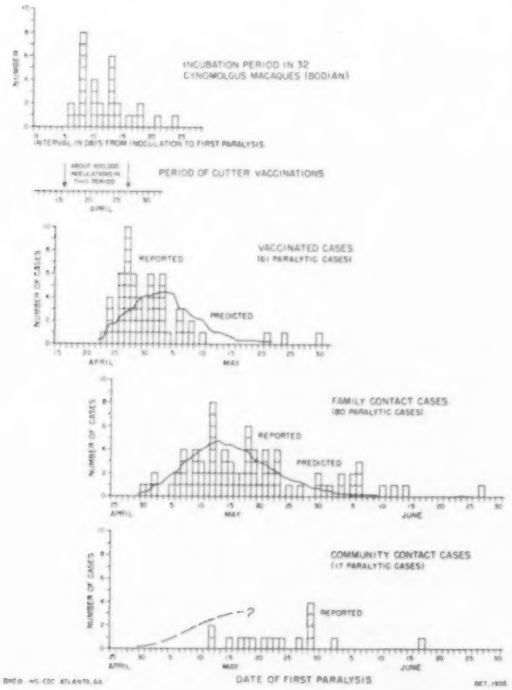

Figure 1—The Cutter Cases—Predicted and Reported Epidemic Curves

Table 5—Paralytic Poliomyelitis in Cutter Vaccinated Individuals Compared with Experimental Data in the Cynomolgus Macaque

Interval from Inoculation to First Paralysis		Site of First Paralysis: In Inoculated Extremity	Site of First Paralysis: Distant from Site of Inoculation	Site of First Paralysis: Data Incomplete	Totals: Number	Totals: Per cent	Monkey Data *: Number	Monkey Data *: Per cent
0–3 days								
4–7		9	3		12	20	3	9
8–14		29	10	2	41	67	23	72
15–21		2	3		5	8	5	16
22 or more			3		3	5	1	3
Total	Number	40	19	2	61	100	32	100
	Per cent	66	31	3	100			
Monkey Data †	Number	23[1]	9[2]		32			
	Per cent	72	28		100			

* Data abstracted from David Bodian (reference 1). In the experiment cited live Mahoney virus was injected into the right calf of 32 cynomolgus macaques. The animals were examined twice daily to determine the date and site of initial paralysis.

† Personal communication from Dr. Bodian of unpublished observations from the experiment cited above. (1) In some cases initial paralysis developed simultaneously in several extremities, including the right leg; and (2) in some cases initial paralysis developed simultaneously in several sites but in all cases the right leg was not involved at the time when paralysis was first noted.

nity contacts and also in a number of persons without history of vaccination or contact. This evidence was insufficient to exclude the possibility that the reported associations were coincidental.

Later, however, several cases associated with one lot of Wyeth vaccine were reported from Maryland. These occurred not only among vaccinated children, but also among family and community contacts under circumstances that raise strong suspicion of some explanation other than coincidence.

This lot of vaccine has been tested extensively in both tissue culture and monkey tests by the Division of Biologic Standards of the National Institutes of Health and independently by collaborating laboratories. No poliomyelitis viruses have been isolated.

Both of the foregoing occurrences involved lots of vaccine that were released and used shortly after the announcement of the results of the 1954 field trials. On May 7 the Surgeon General recommended temporary suspension of the vaccination program pending a full reappraisal of the safety testing and clearance procedures for vaccines. By that time over four million inoculations had been given. Except for the incidence of poliomyelitis in connection with certain lots of Cutter and one lot of Wyeth vaccine, no other situation involving the possibility of unsafe lots of vaccine was recognized.

Beginning on May 13, and continuing to the present, all lots of vaccine have been released under revised safety standards. Epidemiologic surveillance for possible untoward incidents has been constantly maintained. All states and territories have been and are reporting cases of poliomyelitis which occur

Table 6—Poliomyelitis Cases Associated with Cutter Vaccine with One or More Virus Isolations from the Patient or Contacts

Virus Type	Vaccinated Cases		Family Contact Cases		Community Contact Cases		Total Associated Cases		
	P	NP	P	NP	P	NP	P	NP	Total
Type I	32	4	43	9	10	2	85	15	100
Type II		1						1	1
Type III	1						1		1
All types	33	5	43	9	10	2	86	16	102
Total cases	61	18	80	25	17	3	158	46	204

Reports of negative attempts at virus isolation are incomplete and are not included. Also not included is a report from Dr. John Fox (Tulane University) of the isolation of Type III virus from a fatal vaccinated case from which a previous isolation of Type I virus had also been made.

This table compiled from reports contributed by the following laboratories: Rocky Mountain Laboratory, NIH (Drs. Carl Larson and Karl Eklund); Tulane University School of Medicine (Drs. John Fox and Louis Potash); Virus and Rickettsia Section, CDC (Drs. Morris Schaeffer and Robert Francis); University of Oregon School of Medicine (Dr. Arthur Frisch); Department of Bacteriology, University of Utah School of Medicine (Dr. Louis Gebhardt); Virus and Rickettsial Laboratory, California Department of Public Health (Dr. Edwin Lennette); Yale University School of Medicine (Dr. Joseph Melnick); Laboratory of the Illinois Department of Public Health (Dr. Howard Shaughnessy); Department of Bacteriology and Immunology, University of Minnesota (Dr. Jerome Syverton); and Virus Laboratory, National Microbiological Institute (Dr. Alexis Shelokov).

among vaccinated children. These are tabulated by lot number so that individual cases associated with the same lot but occurring in separate states will be promptly recognized. Special attention is directed toward cases which occur at an interval of 4–14 days after inoculation and to paralytic cases showing first paralysis at the site of inoculation. The essential data on each case occurring in a vaccinated person are printed in the Surveillance Reports, thus making these data available to all responsible authorities.

The cases of poliomyelitis that have been reported among vaccinated persons since the first of July have shown certain distinctive characteristics. Over three-fourths have been reported as nonparalytic. Most have occured more than 30 days after vaccination, and only a few in the interval 4–14 days. Among the relatively infrequent paralytic cases, instances with first paralysis occurring at the site of inoculation have been conspicuously rare. No single lot of vaccine has been associated with more than one such case. Thus no evidence has come to light that tends to incriminate any lot of vaccine of any manufacturer that has been released and used since the new safety standards were adopted.

Evaluation of Effectiveness

Special Studies—During the period prior to May 7, when inoculations were temporarily suspended, few plans had been made to conduct controlled studies of the effectiveness of the vaccines in current use. The anticipated flow of fairly large supplies of vaccine and the known great demand for it seemed to preclude the possibility of selecting adequate control groups. When it became

apparent, however, that supplies of vaccine would not be sufficient even to meet the commitments of the NFIP contracts a unique opportunity for evaluation studies was presented. The situation had similarities to the observed control studies of the 1954 field trials, except that approximately 10 times as many school children had received at least one inoculation and prior arrangements for evaluation had not been made.

Many states rapidly developed plans for special studies in collaboration with the Communicable Disease Center. Epidemic intelligence service officers were assigned to participate in many areas. Funds that were being made available to the participating laboratories were directed to the support of these studies. The gathering together of data regarding effectiveness of the vaccine as used in 1955 became a major aspect of the Surveillance Program. Special studies of varying degree of detail are in progress in approximately 20 states. In some of these the groups inoculated during the 1954 field trials remain under observation and are large enough to give promise of some evaluation of the duration of immunity and the effectiveness of booster inoculations. Preliminary reports have been received from 11 states and one city for inclusion in this paper.

The preliminary report from New York State, submitted by Dr. William G. Beadenkopf, illustrates the basically simple pattern of these special studies (Table 7). Four distinct groups of immunized children, totaling almost 450,000, are under observation, along with a group of 282,000 unvaccinated children. Attack rates for paralytic cases are 4.0 per 100,000 for the total inoculated group and 20.9 for the uninoculated children making a ratio of greater than 5–1 in favor of the vaccine. Attack rates for nonparalytic cases are 28.5 among vaccinated children and 39.4 among the unvaccinated, the ratio of these two rates being somewhat less than 3–2 in favor of the vaccine. Distinctions in attack rates for either paralytic or nonparalytic cases among

Table 7—New York State Department of Health Poliomyelitis Rates by Vaccination Status in 6- to 10-Year-Olds in Upstate New York *

(Preliminary Data, May 21 to October 21, 1955)

Vaccination Status	Population	Cases †				Rates per 100,000		
		P	NP	U	T	P	NP	T
Vaccinated in 1954								
Booster in 1955	23,370	0	8	0	8	..	34.2	34.2
No booster	74,330	4	18	1	23	5.4	24.2	30.9
Vaccinated in 1955								
One dose	181,695	9	63	3	75	5.0	34.7	41.3
Two doses	169,174	5	39	3	47	3.0	23.1	27.8
Total vaccinated	448,569	18	128	7	153	4.0	28.5	34.1
Total unvaccinated	282,000	59	111	8	178	20.9	39.4	63.1

* Data compiled by Dr. William Beadenkopf, Bureau of Epidemiology and Communicable Disease Control, and Dr. David Poskanzer, epidemic intelligence service officer assigned to New York State.

† Does not include 8 cases for which vaccination status is not known. P—paralytic, NP—nonparalytic, U—unspecified, T—total.

the four separate groups of vaccinated children are not slight. The absence of paralytic cases from the small group of children inoculated in 1954 and boosted in 1955 is interesting but not statistically significant. When final data are available giving more accurate classification of paralytic cases and laboratory confirmation or exclusion of the cases now classified as nonparalytic, considerable differences in the rates may be anticipated, although it seems doubtful that the 5–1 difference in incidence of paralytic cases among vaccinated children will be nullified.

Table 8 presents a simple summary of preliminary reports of special studies that have been submitted from 11 states and New York City. The size of the study populations and the number of cases by paralytic status are shown for each state. These data were used to calculate attack rates as shown in Table 9. There is a marked difference between the attack rates for the vaccinated and unvaccinated groups. For paralytic cases the rates are from two to more than five times greater in the unvaccinated than in the vaccinated groups. For the nonparalytic cases no differences

Table 8—Summary of Special Studies Reported from 11 States and New York City

(Preliminary Reports Received through November 1, 1955)

State	Age Group Studied	Period Studied From	To	Vaccinated * Population	P	NP	U	T	Unvaccinated Population	P	NP	U	T
California	6– 8	6–15	10–15	395,000	13	47		60	431,000	43	45		88
Connecticut	5– 9	1– 1	10–22	106,120	6	38		44	89,400	18	59	7	84
Florida	5– 9	4–15	10–21	149,664	2	23		25	224,507	11	25	20	56
Georgia	6–11	4–16	10–23	174,200	6	6		12	262,400	20	19		39
Illinois	6– 9	4–18	9–15	357,000	5	45		50	326,000	34	80		114
Maryland	5– 9	4–12	10– 8	112,000	4				158,000	27			
Minnesota	6– 9	5–20	10–28	112,115	3	21		24	33,259	10	12		22
New York City	6– 7	6– 1	10–21	166,000	9	13		22	87,000	19	32		51
New York State	6–10	5–21	10–21	448,569	18	128	7	153	282,000	59	111	8	178
North Carolina	5– 9	4–12	10–21	196,466	4	19		23	232,133	25	58	5	88
Oregon	7– 9	5–22	8–23	47,852	1	2		3	46,188	7	4		11
Washington	5– 9	5–15	10–14	69,123	4	1		5	190,179	40	20		60

* P—paralytic, NP—nonparalytic, U—unspecified, T—total.

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Table 9—Summary of Special Studies Reported from 11 States and New York City Poliomyelitis Attack Rates by Paralytic Status among Vaccinated and Unvaccinated Children

(Preliminary Reports Received through November 1, 1955)

State	Paralytic Rate Per 100,000		Nonparalytic Rate Per 100,000		Total Rate Per 100,000	
	Vaccinated	Unvaccinated	Vaccinated	Unvaccinated	Vaccinated	Unvaccinated
California	3.3	10.0	11.9	10.4	15.2	20.4
Connecticut	5.7	20.1	35.8	66.0	41.5	94.0
Florida	1.3	4.9	15.4	11.1	16.7	24.9
Georgia	3.4	7.6	3.4	7.2	6.9	14.9
Illinois	1.4	10.4	12.6	24.5	14.0	35.0
Maryland	3.6	17.1				
Minnesota	2.7	30.1	18.7	36.1	21.4	66.1
New York City	5.4	21.8	7.8	36.8	13.3	58.6
New York State	4.0	20.9	28.5	39.4	34.1	63.1
North Carolina	2.0	10.8	9.7	25.0	11.7	37.9
Oregon	2.1	15.2	4.2	8.7	6.3	23.8
Washington	5.8	21.0	1.4	10.5	7.2	31.5

See Table 8 for acknowledgements.

were observed in some states and rates up to two or more times greater in others.

In evaluating these preliminary reports many possible sources of error must be kept in mind, such as the accuracy and completeness of the history of vaccination, the criteria for classification of paralytic status, and the accuracy of the population estimates. In some areas outbreaks of diseases that clinically resemble nonparalytic polio have been prevalent. Another problem arises in classifying cases of polio developing shortly after inoculation and before immunity can be expected to have developed. These and other factors of bias must be considered. When final reports are available many differences from these preliminary figures may be expected. At present it is difficult to judge whether these factors of bias serve to exaggerate or minimize the effect of the vaccine.

Because of these unassessed factors of bias, a search was made for some independent confirmation of the results of these special studies. The Age Distribution Analysis Study was designed for this purpose. Since it was known that the age-specific attack rates for poliomyelitis followed a relatively continuous distribution curve and since use of poliomyelitis vaccine had been restricted almost solely to first- and second-grade children representing mostly 7- and 8-year-olds, a discontinuity should appear in the age distribution this year if the vaccine were effective.

In collaboration with 33 states, data on age, onset, and reported paralytic status of all cases of poliomyelitis are being submitted to the Polio Surveillance Unit. As a control, similar tabulations for the year 1952 have been compiled from 21 of these 33 states. Figure 2 shows the geographic distribution of the states participating in this aspect of the Surveillance Program.

The upper half of Figure 3 shows curves describing paralytic poliomyelitis for 1952 and 1955, drawn from data presented in Table 10. The absolute level of the rates for the two years

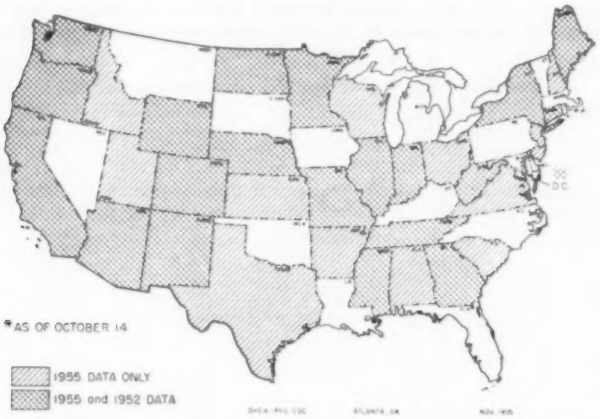

Figure 2—States Participating in Age Distribution Analysis Study *

differs because of the severity of the epidemic in 1952 compared to 1955 and because data for the full calendar year are included for 1952 and data only for the period July 3 through October 14 are included for 1955. The two curves have been superimposed by a simple arithmetic transposition. The two rate scales are clearly shown.

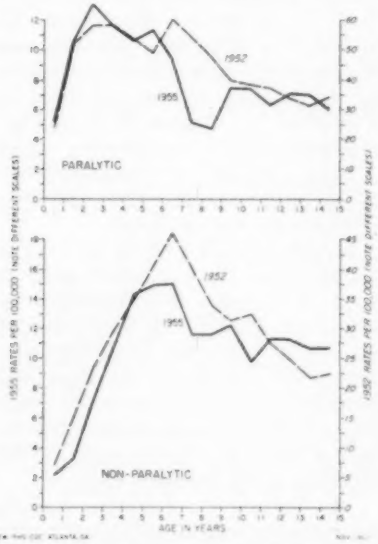

Figure 3—Poliomyelitis Age-Specific Attack Rates in 1955 (Preliminary Data for July 3 to October 14 from 33 States) and 1952 (21 States).

The two distribution curves for paralytic cases are similar with one major exception, namely a relatively sharp lowering of the rates for ages 7 and 8 in 1955. This discontinuity in the age distribution curve is limited to the ages in which poliomyelitis vaccine was widely used this year, and this discontinuity constitutes independent evidence of the effectiveness of the vaccine against paralytic polio.

In the lower half of Figure 3 are shown the age distribution curves for nonparalytic cases in 1952 and 1955. A different transposition factor has been used to superimpose the curves. No sharp discontinuity is discerned that can be clearly attributed to an effect of the vaccine.

Summary

The National Poliomyelitis Surveillance Program was initiated in April,

Table 10—Age Distribution Analysis Study, Age Distribution of Poliomyelitis in 1955 and 1952

Age	1955 (33 States)					1952 (21 States)				
	Population Estimates	Cases		Rates *		Population Estimates	Cases		Rates *	
		P	NP	P	NP		P	NP	P	NP
Under 1	2,848,000	148	64	5.2	2.2	1,665,000	400	122	24.0	7.3
1	2,778,000	294	94	10.6	3.4	1,624,000	855	255	52.6	15.7
2	2,709,000	354	196	13.1	7.2	1,555,000	908	365	58.4	23.5
3	2,637,000	306	282	11.6	10.7	1,565,000	919	466	58.7	29.8
4	2,598,000	276	371	10.6	14.3	1,554,000	833	546	53.6	35.1
0–4	13,570,000	1,378	1,007	10.2	7.4	7,963,000	3,915	1,754	49.2	22.0
5	2,490,000	281	371	11.3	14.9	1,684,000	829	680	49.2	40.4
6	2,497,000	231	375	9.3	15.0	1,214,000	737	558	60.7	46.0
7	2,482,000	127	289	5.1	11.6	1,208,000	658	487	54.5	40.3
8	2,674,000	127	311	4.7	11.6	1,202,000	577	410	48.0	34.1
9	1,936,000	145	236	7.5	12.2	1,270,000	509	401	40.1	31.6
5–9	12,079,000	911	1,582	7.5	13.1	6,578,000	3,310	2,536	50.3	38.6
10	1,916,000	141	187	7.4	9.8	1,111,000	426	362	38.3	32.6
11	1,926,000	121	217	6.3	11.3	1,047,000	391	287	37.3	27.4
12	2,036,000	144	231	7.1	11.3	994,000	339	247	34.1	24.8
13	1,788,000	125	192	7.0	10.7	998,000	315	218	31.6	21.8
14	1,671,000	101	178	6.0	10.7	976,000	339	220	34.7	22.5
10–14	9,337,000	632	1,005	6.8	10.8	5,126,000	1,810	1,334	35.3	26.0
0–14	34,986,000	2,921	3,594	8.3	10.3	19,667,000	9,035	5,624	45.9	28.6
15 plus	80,063,000	1,687	1,948	2.1	2.4	50,415,000	4,529	2,521	9.0	5.0
Unknown		9	9				57	35		
Total	115,049,000	4,617	5,551	4.0	4.8	70,082,000	13,621	8,180	19.4	11.7

* Per 100,000 population.

Data for 1955 consist of preliminary reports through October 14 from 33 states (see Figure 2) of cases with onsets July 3 or later, but do not include 632 cases with paralytic status unspecified; 1952 data consist of reports from 21 states (see Figure 2) of cases with onsets in the calendar year (1954 data have been substituted in Arizona, Indiana, Missouri, and Tennessee), but do not include 3296 cases with paralytic status unspecified. Population estimates are for July 1, 1955, and were derived from data and methods provided by the Bureau of the Census.

1955, to serve as a clearing house for the collection, consolidation, and dissemination of all pertinent epidemiologic information concerning the poliomyelitis problems facing the nation. Headquarters of the program are located in the Communicable Disease Center in Atlanta, Ga. All states and territories are collaborating in the program. More than 40 laboratories are participating. Epidemic intelligence service officers have served with first priority duty throughout the spring and summer and many are still working essentially full time on poliomyelitis.

The Surveillance Program has been concerned with two main problems: (1) the epidemiologic evaluation of the safety, and (2) the measurement of the effectiveness of the vaccine.

A total of 204 cases of poliomyelitis with 11 deaths are known to have occurred in association with vaccine manufactured by Cutter Laboratories. Of these, 79 were among vaccinated children, 105 among family contacts of vaccinated children, and 20 among community contacts. The epidemiologic pattern of these cases, including (1) their geographic distribution, (2) the association of cases with particular lots of vaccine, (3) the grouping of the onsets of most of the cases with appropriate incubation periods following inoculation, and (4) the correlation between the site of inoculation and the site of first paralysis in a majority of the paralytic vaccinated cases, supports the conclusion that live virus in infective amounts was present in some distribution lots of Cutter vaccine.

A problem was also encountered in the epidemiologic evaluation of a few cases of poliomyelitis that occurred in association with one lot of vaccine manufactured by Wyeth Laboratories. Except for the difficulties with some lots of Cutter and one lot of Wyeth vaccine, however, no other situation involving the possibility of unsafe lots of vaccine was recognized in the more than four million inoculations that were given in April and early May.

Since the middle of May, when a complete revision of safety standards and clearance procedures was adopted, no epidemiologic evidence has come to light that tends to render suspect any lot of vaccine of any manufacturer.

Preliminary reports indicate encouraging results regarding the effectiveness of the vaccine. The restriction of inoculations to first- and second-grade school children during the spring and summer of 1955 provided a unique opportunity for special studies to evaluate effectiveness. Approximately 20 states are conducting such investigations. Tentative results, subject to modification and revision, reveal that the attack rates for paralytic polio are from two to more than five times greater in the unvaccinated than in the vaccinated children. Less marked but favorable differences are reported for nonparalytic cases.

Confirmation of these preliminary findings has been obtained from a study of the pattern of the age distribution of cases of poliomyelitis reported this year from 33 states. A sharp reduction in paralytic attack rates in 7- and 8-year-old children has been observed, in comparison to the expected rates based on past experience. This finding constitutes an independent confirmation of the effectiveness of the vaccine as used this year.

ACKNOWLEDGMENTS—The authors wish to thank the following persons for valuable contributions to this report:

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Lastly, the states and territories and more than 40 participating laboratories have generously provided the data upon which this report is based.

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The 83rd APHA Meeting

Among the features of an outstanding Annual Meeting at Kansas City, Mo., there was one which recognized 28 persons whose membership has been maintained continuously for the 40 years since 1915. That was the year when Professor William T. Sedgwick of the Massachusetts Institute of Technology was President. It was pointed out that among these members of long standing a third had some close link with Professor Sedgwick. In a real sense in 1955 and in this event the lengthened shadow of a great man was clearly apparent.

Notice appeared in the December issue that the Sedgwick Memorial Medal for 1955 was awarded to the late Albert J. Chesley, M.D., who for 53 years was identified with the Minnesota State Department of Health. Dr. Chesley's untimely death shortly before the award was made prevented his personal acceptance, but he was aware of the coming honor which, characteristically, he would not admit that he deserved.

The Association last met in Kansas City in 1938 when the membership was about 40 per cent what it was in 1955. Some expansions in the hotels made the facilities still adequate, The excellent location of the auditorium with its superb facilities was an important factor in making this an outstanding meeting. Combined with the facilities was the cordial western hospitality of the Heart of America Committee with Dr. Hugh L. Dwyer, the director of health, as our most genial host.

We are told that the large Program Committee for this meeting labored more diligently than ever before, and the result spoke volumes for the planning. The Association Symposia which opened the sessions on Monday morning and closed them on Friday afternoon were truly unique. Built around the theme of the meeting, "Where Are We Going in Public Health?," there were four provocative addresses in the first symposium. Four spokesmen from organized labor, from industry, from government, and from education told the large audience what they expected from public health in the years ahead. Readers of the Journal will have reason to be grateful to these spokesmen for their stimulating statements.

This theme begun on Monday was carried through meetings of all the sections and the final symposium on Friday featured a selected panel with consultants from each section ready to bring to bear the special insight of that group. The Journal will carry a resumé of the discussion so effectively led by Dr. Hugh R. Leavell.

Intense interest was also manifest in the session on "Practical Experience with Poliomyelitis Vaccine" ably presented by a panel led by Dr. Malcolm H. Merrill. The contribution from Dr. Jonas Salk will be found in this issue. A host of questions came from the audience, many of which could not be answered for lack of

time. The Journal expects to carry in an early issue a complete listing of the questions and the answers from competent persons.

The wealth of specialized interests from all the sections provided a rich feast for the thousands of persons in attendance. All agreed that the scientific and technical exhibits were of exceptional extent and quality. The pattern this year of accommodating the meetings of 43 related organizations during the week appeared to be accepted with a maximum of approval and a minimum of serious conflict.

Among the two general sessions, the Presidential Address of Dr. Hilleboe has been published in the December Journal. Another excellent address by Chancellor Franklin D. Murphy is published in this issue. The second of these evening sessions included the presentation of the APHA Lasker Awards to 17 persons. This was the tenth annual presentation of these awards for distinguished achievement in the prevention and cure of diseases affecting large numbers of persons. It was a distinguished company honored this year, with the honors going to three nurses, four surgeons, two psychiatrists, four tuberculosis physicians, two pharmaceutical firms, the man who discovered dicumarol, and an outstanding administrator and teacher from Canada (see A.J.P.H. 45:1606–1610 (Dec.), 1955). It was a notable occasion. The address on the national significance of research in public health was by former President Harry S. Truman.

Among important actions by the Governing Council was the adoption of the By-Law revisions as proposed (see A.J.P.H. 45:1081–1083 (Aug.), 1955). It was reported that the Constitution changes as proposed had been adopted by a mail vote of the Fellows. In the future adoption of Constitution changes will be by both members and Fellows in a mail ballot.

One hundred and eighty-four persons were elected Fellows of the APHA. Honorary Fellowship was voted for six persons living abroad. The Council confirmed the place and time of the 84th Annual Meeting to be in Atlantic City, N. J., November 12–16, 1956. The meeting in 1957 will be held in Cleveland, Ohio. The resolutions adopted appear in this issue.

At the close of the Council's meetings Dr. Hilleboe inducted Ira V. Hiscock, Sc.D., Chairman of the Department of Public Health at Yale University, as President for the coming year. Other officers elected include John W. Knutson, D.D.S., Assistant Surgeon General, U. S. Public Health Service, Washington, D. C., as President-Elect; Dr. Charles Glen King was reelected Treasurer. Dr. Ernest L. Stebbins will succeed himself for a three-year term on the Executive Board and Dr. Thomas R. Hood, State Health Officer of Kansas, was elected for a similar term.

Another important action was the creation of a new Section on Mental Health at the request of a distinguished list of sponsors. This will provide a home in the APHA for all professional workers in this growing area of the greatest importance and has already succeeded in laying sound foundations under the concept that mental health, especially at the community services level, is a real part of public health.

The comment has frequently been heard that the 83rd was the best yet. Certain it is that it was the result of an uncommon amount of mutual involvement and effort.

The National Association of Social Workers

In a world characterized by the rapid multiplication of organizations and associations which compete for our energy and attention, it is a pleasure to report the

birth, on October 1, 1955, of a new organization, The National Association of Social Workers. This organization is not merely another one to be added to the roster of organizations but replaces seven separate, professional, social work membership associations. Prior to the formation of this new association there was one association, the American Association of Social Work, concerned with the over-all interests of social work, and six others focused on special interests in social work: social group work, community organization, research, social work in schools, psychiatric social work, and medical social work. The latter two are most familiar to the public health field.

Motivating the seven preceding organizations through their seven years of arduous negotiations leading to the formation of the one association was the conviction that the contribution of social work to strengthening, improving, and expanding health and welfare services could best be made through one association. In the latter, common concerns of all social workers could be pursued as a joint endeavor, but at the same time the development of the unique interests of the specialties within social work would be fostered. This will be accomplished through the existence of five sections, each representing a specialty and each with its own executive committee, staff, and program. Thus the interests of the American Association of Medical Social Workers will be carried forward and further developed in the Medical Social Section of the National Association of Social Workers at the same time that medical social workers contribute to the general program.

The common concerns of the profession are represented by commissions and committees dealing with such subjects as social work practice, education for social work, recruitment, social policy, personnel practices, and interpretation. Through these commissions, committees, and sections subjects of special interest to public health will be considered, such as school health, in the section for school social workers; mental health in the section for psychiatric social workers; and general health and medical care in the medical social section.

The National Association of Social Workers has 21,600 members. Of these, more than 2,000 are members of the medical social work section. A master's degree from an accredited school of social work is required for membership, with special education or experience required for membership in the sections. The local program is carried forward through 146 chapters throughout the nation. In many chapters there are also sections for the specialties.

Offices of the National Association of Social Workers are at One Park Avenue, New York City. Its first President is Nathan E. Cohen, associate dean of Columbia University's New York School of Social Work. Joseph P. Anderson is its executive director.

(The Journal is indebted to Elizabeth P. Rice, associate professor of social work in public health, Harvard University School of Public Health, Boston, Mass., for assistance in the preparation of this editorial.)

Should the Health Officer Look at the Automobile—the Misguided Missile?

In 1954 one out of every 17 persons in the United States had a disabling injury. Accidents killed 91,000 and injured 9,200,000. Of this startling wastage of lives, the motor vehicle was the number one cause. For years now the motor vehicle has

killed between 35,000 and 40,000 people a year. And has disabled regularly some 2,000,000 persons annually! No wonder, this juggernaut has been aptly named the "misguided missile"!

We have announced with pride in the last few years that some health departments have recognized that people die and are hurt in home accidents—a belated acknowledgment that over 25,000 deaths due to this cause each year may be as important and as preventable as diphtheria, or smallpox, or even tuberculosis and typhoid fever. More difficult to track down or to prevent—yes, but a death is a death and millions of injured a year still ought to attract the professional eye of the health officer.

Is the best we can do, as health officials, to raise our eyebrows, when we read that Tom Brown was killed when his automobile collided with the end of a bridge at 80 miles an hour? Is the phrase, "isn't it too bad," the limit of our epidemiologic and preventive interest? What has become of our militant heritage when we compelled smallpox vaccination, diphtheria control, the banning of polluted water supplies, even the prohibition of cream puffs in the summer?

Should the health officer let a blind man drive, an automobile manufacturer place a 100 mile an hour automobile in everybody's hand, get a driver's license by post card or telephone, let a narrow bridge take an annual toll? The surgeon has risen to the occasion by saving more lives in 1954 than in 1950 by improved and more rapid action. The number of injured has risen since 1941 by 32 per cent, but many have been recaptured from the dead.

In 1954 the death rate from auto accidents dropped to 61 per 100,000, but 1955 may be worse. What makes these coffins less important, less challenging, and less our responsibility than if they contained a person who died of cancer, tuberculosis, or heart disease? They are equally dead!

Mental Health Week, April 29–May 5

The 8th annual National Mental Health Week, sponsored jointly by the National Institute of Mental Health and the National Association for Mental Health and directed by the latter, will be observed April 29 through May 5, 1956. This week serves as the highpoint for the year-round effort to mobilize people in the fight against mental illness.

State mental health associations are expected to take leadership in stimulating state-wide observance of the week in cooperation with other state health agencies. The national body has prepared a kit of educational and publicity materials. These have been sent to state associations which are serving as mental health week coordinators.

Report of the Chairman of the Executive Board of the American Public Health Association to the Governing Council, 1954–1955

Nineteen hundred and fifty-five is a significant year in science and industry. For the first time, fully ten years after the initial destructive use of nuclear energy, the nations of the world have jointly taken stock of the developments in the atomic field for peaceful uses and are looking ahead to new accomplishments in productivity and health in contrast to previous emphasis on mass destruction. Likewise, the American Public Health Association has designated this year for stocktaking and for realignment of over-all goals for the future. "Where Are We Going in Public Health?," the theme for this year's Annual Meeting, is the subject of two important symposiums and the thread runs through the various section programs. It is appropriate, therefore, as I report to the 121 members of the Council, to ask: How well have we tried to achieve our goals? How closely have we come to reaching them? How do our goals differ (if they do) from those of the federal, state, and local health departments? What do we, as a voluntary association in the public health field, do?

Dr. Alan Gregg, vice-president of the Rockefeller Foundation, recently gave a masterly exposition of the role of national associations in contemporary culture. In a democratic society, he said, citizens as laymen by associating with each other (as well as individually) can exercise the eternal vigilance that is the price of liberty. We do not have to leave what interests us to the experts or to a government bureaucracy. We can intercede when official pronouncements are unwise or difficult. Our strength lies in well informed participation that is "steady but imaginative." Such a goal is practicable and attainable. To a large extent we have achieved such a steady and imaginative participation.

The APHA constitution calls for the protection and promotion of public and personal health. This was originally worded in 1872 as "the advancement of sanitary science and the promotion of organizations and members for the practical application of public hygiene." How have we tried to accomplish these objectives during the last year and to what degree have we, as a voluntary association with multiprofessional competency, succeeded?

In your appraisal of the past year and of the coming Annual Meeting, may I suggest that the members of the Governing Council keep in mind such questions as the following: What are the areas in which the future developments of public health lie? How shall we plan for a proper balance between official and voluntary effort in public health? Between public and private effort? How can our best leadership be mobilized for the guidance of public health, one of the chief cornerstones of the state?

Exploring New Fields

Dr. Gregg, in the address quoted above, divided national associations into two major groups, each of which has

definite values, but neither of which in extreme form, exercises major usefulness. One group is made up of the associations that in Dr. Gregg's words "tend to conservatism and compromise, subservient at once to their electorate and to the past. Their leaders resemble cautious moderators more closely than intrepid pioneers. . . ." In this age of rocket propulsion, supersonic speeds, and the thermonuclear developments the individuals and organizations that continue in their familiar grooves run the risk of being bypassed and left in the rear.

The other group represents pioneering zealots, reflecting the hazards of "extreme individualism and the vagaries and vicissitudes of unreflecting independence." Their contributions "though daring and sometimes noble, remain all but unorganizable, so personal are they, so emotional, fitful, unpredictable, and radical."

Newer Elements in Public Health

The Association, guided by a well qualified and diversified Governing Council has, I believe, steered a middle course and continued to keep up with and exert leadership in our field. We attempt to utilize and obtain maximum advantage from the chief source of strength of national associations described by Dr. Gregg as "well-informed participation that is steady but imaginative." We have not been content to sit in our accustomed niche of the basic six public health functions. As new problems assume increasing importance we have explored them boldly. This past year, for example, we have seen substantial advances in medical care, chronic disease, rehabilitation, and accident prevention.

Two special studies to ferret out the best in current practice, to digest and evaluate it, and to pass it on throughout this country and the world have been carried on in both chronic disease and rehabilitation and in accident prevention. These attempts to keep up with the scientific times are being carried on in spite of a continual and difficult battle for adequate study funds. These studies, if done by regular agencies in opinion and research, would cost many thousands of dollars. Fortunately, with the help of the thousands of APHA members, we can achieve these results at a fraction of their actual cost. If properly implemented the results can realize huge dividends in both health and dollars.

In the area of medical care our activities have contributed to the development of a policy statement on tax-supported medical care for the needy for which is sought the joint sponsorship of the American Medical Association, the American Dental Association, the American Hospital Association, and the American Public Welfare Association in addition to our own.

With the end of the Commission on Chronic Illness in mid-1956, CAP's Subcommittee on Chronic Disease and Rehabilitation, as well as the Subcommittee on Medical Care, may well find themselves with certain responsibilities heretofore lodged in the commission.

New inventions, new synthetic compounds, and modern merchandizing and distribution methods are increasing the accidental poisoning hazard in man's immediate environment. This year a new subcommittee of the Committee on Research and Standards has been organized to explore control measures in this area. New fields explored by the various standing committees and their subcommittees will be reported to the Governing Council by these committees themselves. I shall attempt simply to enumerate some of the highlights.

Joining Forces with the Behavioral Sciences

People behave as they do for a variety of complicated and often inapparent and seemingly irrelevant reasons.

Several professional disciplines have over the years developed special methods and special knowledge in the study and evaluation of behavior patterns in man. A major public health goal is directed toward influencing people to change their behavior in order to reduce the probability that they will contract disease or spread it. A new joint committee has been developed, stepping across customary professional lines, to link representatives of the American Anthropological Association, the American Psychological Association, and the American Sociological Society with our own Association. The purpose is to provide an interdisciplinary channel of communication to give public health workers more opportunities for education and experience in the behavioral sciences and to develop opportunities for behavioral scientists to gain further education and experience in public health. There is much promise in this development of the year.

Mental Health

Mental health activities are assuming an increasing role in state and local governments. Mental ill-health represents a major public health problem. The cost of current programs for treatment and prevention of mental illness by health, welfare, and related departments runs into millions of dollars annually. The Executive Board has requested the Committee on Administrative Practice to develop a study group to look into the administration of state mental health programs, to describe current practices, and to make recommendations. Three sessions during the Annual Meeting are scheduled for the purpose of discussing the development of an APHA Section on Mental Health and illustration of some of the problems that might concern it. The APHA has thus an opportunity to serve another grouping of public health workers. Further, the Committee on Research and Standards is exploring the Association's responsibility in mental health research.

Bettering the Building Blocks of Health

Scientific Selection Services

The major building blocks of public health are the persons who plan and carry out the work. A talented, well trained, experienced person who knows his job and knows how to get along with people can often succeed in spite of unwieldy administrative situations. The serious drawback of scanty funds may even yield to the right approach from a competent person with knowledge of his job, of public relations, and of human psychology.

The APHA Professional Examination Service has done a masterful job in taking some of the guesswork out of and putting scientific selection methods into measurements of the competence and judgment of present and potential personnel in the health professions.

Within the past year this Service has given technical assistance to the American Board of Preventive Medicine in the preparation of its first written examination for diplomates in aviation medicine. Nineteen states now use one or more of the nine professional licensing tests developed by PES. Several professional organizations, such as the American College of Hospital Administrators, the National Board of Veterinary Medical Examiners, the Registry of Medical Technologists, and the American Physical Therapy Association, also use these services. The latter association is now using an examination especially developed to evaluate the competency of physical therapists trained in foreign countries. Over 40 different federal, state, and local health agencies have contracts with PES for examinations used in selecting public health workers in approximately 25 professions. During the past year over

25,000 copies of examinations were sent to agencies.

The Professional Examination Service is now able to operate its program without subsidy. In order to carry on research programs vital to the continued improvement of services, however, study funds are being sought. The PES is continually extending the range of subjects covered by its examinations and has a recognized status as a valuable aid in the selection of professional health personnel.

Improving Formal Public Health Education

You all know of the Association program for accreditation of schools of public health. However, some of you may feel this is primarily a policing function to make sure the various schools do not slip and may regard it as a routine activity. Actually, and in the words of the Association of Schools of Public Health, the "policing function . . . is only one of the functions and is indeed a relatively minor one." The schools themselves affirm the fact that the APHA has brought full statesmanship "to bear on the evolution, growth and development of graduate education in public health." This "involves far more than minimum standards of curriculum, admission policy, size and distribution of faculty, and the like." It has "its primary concern with instruction and research in basic principles applicable not solely to the practical problems of the day, but more fundamentally to the purposes, aims, scope, and intellectual content of the public health of the future." Thus a considerable influence is being exerted in the 12 schools in the United States and Canada that are accredited.

A Current History of Public Health

The field of public health represents a unique synthesis of medicine, dentistry, nursing, engineering, nutrition, education, etc., as applied to the health of groups of people. Making available information about new discoveries and new applications of established practices to the professional persons whom they might benefit is an involved and difficult task. The Association has developed a means of integrating the work of 13 different sections and over 100 various technical committees, as well as many related organizations. Their reports are sifted and condensed and made available in a variety of publications. In effect, they constitute a dynamic and continuous history and evaluation of the best in current public health practice.

Publication of these reports may be either in periodicals or as formal reports. The two types of periodicals are the American Journal of Public Health and the various Newsletters. The formal reports are separate publications on specific topics.

American Journal of Public Health

The Journal has a diversified circulation, going to many professional groups and reaching every state in this country as well as 50 other countries. It is held in such high regard that the paid circulation of the Journal exceeds the membership of the Association by almost 30 per cent. The past year of the Journal has been under the editorship of Professor Abel Wolman, with Dr. Raymond Patterson responsible for manuscript selection.

Newsletters

Each section of the Association distributes Newsletters to its respective members, keeping them abreast of new methods or developments in their own spheres of interest. In addition, the APHA distributes a general Newsletter to the entire membership which this year has been moved up to a bimonthly basis.

Reports and Monographs

Formal reports are in effect monographs stemming from careful studies of committees that include individuals with special competency in several different fields related to the subject under consideration. The reports usually constitute current reviews and analyses of subjects of public health importance and often become authoritative reference guides for countries throughout the world. Several such reports have been published during the past year. The eighth edition of the "Control of Communicable Diseases in Man" was published this year by the Association after adoption by the Governing Council. The manuscript was developed by a committee under the chairmanship of John E. Gordon, M.D. The latest edition includes 102 different diseases. Prior editions have been translated into Chinese, Finnish, French, German, Portuguese, Spanish, and Thai and have been distributed in many foreign countries. The current edition is already being translated into French, Japanese, Portuguese, and Spanish, and other editions are under way. The parent committee of this volume, Research and Standards, is considering the desirability of a similar volume devoted to the control of nutritional diseases.

Five new books of the Committee on Child Health have been published. This committee, including representation from several sections, is engaged in developing guidelines for public health programs in the area of child health. The first publication, "Health Supervision of Young Children," has received the endorsement of the American Academy of Pediatrics, the Children's Bureau, the Association of State Maternal and Child Health and Crippled Children's Directors, and the National League for Nursing. Enthusiastic reviews greeted its appearance and the first printing of 13,000 copies is exhausted. "Services for Handicapped Children," "Children with Cleft Lip and Cleft Palate," "Children with Dentofacial Handicaps," and "Children with Cerebral Palsy," went into circulation as a group on October 1. Additional guides on visual problems, hearing impairments, and orthopedic disorders are nearing completion and others are in various stages of preparation. These are prime examples of the ability of the APHA to mobilize outstanding leadership. The enterprise deserves a generous financial backing of support funds.

Nutrition programs are relatively recent components of public health programs and health officers and others have felt the need for a summary of the salient administrative factors in the field of public health nutrition. "Nutrition Practices," a 72-page pamphlet, represents just such a guide for public health administrators. It was developed by a special subcommittee of the Committee on Administrative Practice under the chairmanship of Daniel Bergsma, M.D., the New Jersey State Health Commissioner, and was published recently with the assistance of three foundations.

This year marks the 50th anniversary of the oldest and one of the most authoritative and generally accepted of Association publications. The 10th edition of "Standard Methods for the Examination of Water, Sewage, and Industrial Wastes" has been substantially revised in format and its contents considerably expanded. This edition was cosponsored by the American Water Works Association and the Federation of Sewage and Industrial Wastes Associations and represents the general basis for official laboratory procedures in measuring the safety of water and in controlling the disposal of liquid wastes. The volume has been translated into Italian and Spanish and has been widely distributed outside as well as within the United States. The first printing of 5,000 was exhausted within four months.

Health Careers

This past year has seen an outstanding effort in interesting young people in health careers. "Health Careers Horizons," a series of vignettes and descriptive material covering 156 positions in 30 categories of health positions, was published by the National Health Council with the backing of the Equitable Life Assurance Society of the United States. The APHA participated actively throughout the project. A sustained effort is being made to alert the public health professions to respond as requests arise from young persons for counseling. We believe this project has high promise of being influential in steering many persons into professional health channels.

Related to this effort is a proposed project of CPE. After a number of years of considering how recruitment might be stimulated, CPE is trying to get down to basic motivations. What is it that gets people into public health? The modern technics of the social sciences will be used in exploring motivations. The study, for which funds are being sought, will be carried out in cooperation with the University of North Carolina School of Public Health.

General Status of the Association

Financial Solvency

In these days when the budgets of many voluntary and official health agencies exceed their income, it is a satisfaction to report that the Association continues to achieve a balanced budget. In accordance with the By-Laws, the Executive Board is responsible for the operation of the fiscal affairs of the Association. In spite of a multiplicity of pressures for financing additional efforts by the Association, the board has been able to avoid a deficit for the year and yet increase the over-all budget by about $30,000. This record is especially noteworthy in the face of a continuing basic income of only $321,000. The remaining $236,000 must be raised through special grants, most of which, unfortunately, are for short terms. We make grateful acknowledgment of the contributions received from the Association for the Aid of Crippled Children, the Consumers Union, the Ittelson Family Foundation, the Albert and Mary Lasker Foundation, the W. K. Kellogg Foundation, the Milbank Memorial Fund, the New York Foundation, the New York Fund for Children, the Nutrition Foundation, the Research Foundation, and the Rockefeller Foundation. Through their generosity, these organizations have made possible special projects resulting in outstanding contributions to public health. The Executive Board, the staff and many others are continually exploring further sources of funds for a variety of new projects as well as for the continuation of still incomplete tasks. We would welcome suggestions from any of you as to additional sources of funds or other assets to help in the over-all task.

A substantial portion of our income is derived from the sustaining members of the Association and from the Journal advertisers and technical exhibitors. This is an appropriate occasion to record officially our thanks and appreciation to them. It is also an opportunity to remind each member of the Governing Council that among his wide acquaintanceship there will be persons to whom one of these methods of contributing might be suggested, with benefit to themselves and valuable help to the Association.

Membership Record

There has been little change in the number of members in the past four years since the dues were raised. Although each year sees from 800 to 1,000 new members added, because of deaths,

unpaid dues, and resignations the total does not change substantially. This year as of September 1 there were 12,735 members, resulting in a net membership income of $130,480 for eight months.

Constitution and By-Laws Changes

For the fifth time all members and Fellows have shared in choosing the elective members of the Governing Council. Current Constitution and By-Laws changes by Fellows have further enlarged the participation of members in Association affairs. Pending a mail vote now under way, members in the future may vote on amendments to the Constitution and By-Laws. Also in the direction of democracy is a new provision whereby elective councilors are to be one-third of the total number on the Governing Council.

By-Laws now also make provision for student members, thus broadening the base of membership, as well as serving to interest potential public health workers in the field. Relationships with branches and affiliates are more clearly defined in the By-Laws changes.

New Field Director

In January of this year the position of field director was filled. Although the title was retained, the duties were modified considerably to allow participation in the entire gamut of Association affairs rather than major concern with activities of the Committee on Administrative Practice. The present incumbent, Edward Press, M.D., M.P.H., has been involved in a variety of Association activities in which medical knowledge and training are pertinent.

Finally, I believe all of us can take pride in the numerous substantial developments of the last year. These have moved us along the road to the broad goals set in our comprehensive objective—"the protection and promotion of public and personal health." In reporting these developments I wish to give due credit to those who have helped make them possible. The diversity and number of persons involved is impressive. In checking I found that 1,400 individuals were serving on the scores of committees, subcommittees, and study groups. In addition to the officers of each of the sections, practically all members of the Governing Council and an assortment of individual unaffiliated members and Fellows have participated actively in the work of the Association. As always, the members of the APHA staff have rendered efficient and oftentimes an inspired service under the continual demands of our day-to-day business. Crystallization of the efforts of these individuals makes possible the advances that as chairman of the Executive Board I am able to report to you. I wish to extend my thanks and appreciation and that of the board to each of the members of the Governing Council and to all others who have shared responsibility for these accomplishments.

It is customary to end on this note of thanks for a job well done. This year, however, in line with the theme of our meeting, "Where Are We Going in Public Health?," I want to go beyond this point and ask how we can get the job done better next year. As we ask where we are going in public health, let us also ask how we are getting there? Are we utilizing all effective paths to our goals? Are we moving with all possible speed? Have we selected the best ways of proceeding or has our steady progress blinded us to the short cuts made possible by new discoveries that are at hand for us to adapt and use?

In the spirit of over-all self-reappraisal and evaluation embodied in our theme we need also to reexamine our accomplishments. The essential question is not whether we are doing well, or did better this year than last? Are we doing the best we can? Did our

improvement match or surpass that of our professional peers in the present rather than our own efforts in the past? Do income limitations interfere substantially with specific and unquestionably valuable projects and, if so, have all old and new ways of obtaining funds really been thoroughly exhausted? How does our membership status compare with that of similar professional organizations? Why do some people take the initiative in joining and others fail to join in spite of persuasion? Are there lessons we can learn from other associations?

I am saying in effect—yes, I can, on behalf of the Executive Board, report very creditable achievements during the past year, achievements in which you and many others have shared. At the same time I am asking you and myself how we can improve on these achievements. Are they as closely related to our over-all goals as possible? Are there other activities that would move us toward our goals more rapidly and which might profitably be added to, or replace some current activities? It is such questions which I would leave with you and to which I would urge each of you to turn your attention during the coming meeting and during the next year. As possible answers or ideas occur to you, I would be grateful if you would communicate them to me or to the staff.

ROY J. MORTON, C.E.
Chairman

Fellowships for Medical Students

Continuing a program begun in 1951 the National Foundation for Infantile Paralysis offers fellowships during the calendar year 1956 for medical students interested in vacation time study. The dean of each approved medical school in the United States is to nominate six candidates for these awards: two each for research in the biological and physical sciences related to medicine, for public health and preventive medicine, and for physical medicine and rehabilitation. Students must have completed one year in medical school to be eligible for the research fellowships and two years for each of the other types of awards.

Fellowships provide for full-time consecutive study for a minimum of eight weeks' free time. The stipend is $200 a month for a minimum of two and a maximum of three months. Students interested in fellowships of this type should apply to the deans of their respective schools for the necessary application forms. These must be submitted to the National Foundation for approval before the program begins. Six to eight weeks should be allowed for administrative action by the National Foundation.

During 1955, 77 schools participated in the program and 309 students received fellowships for vacation study. Since 1951, a total of 824 medical student fellowships has been awarded.

Clearing House on Public Health Salary Information and Personnel Needs

Exploiting Health Careers

Two recent and varied examples of using Health Careers Guidebook as a springboard for further action have recently taken place. One is the October issue of the American Junior Red Cross Journal for high school students. Here are reproduced some of the text and pictures from Health Careers and Partners for Health, together with the information that the two volumes may be consulted in the school library or with the vocational counselor.

The second illustration comes from New Jersey where the New Jersey Health and Sanitary Association built its 81st annual meeting around the theme "Youth and Health Careers." The purpose of the meeting was outlined as "to give you facts with which to interest youth in your community in health callings—around 150 all told." The program issue of the association's News Letter used a number of illustrations from Health Careers Guidebook. Principal speaker for the day was Norvin C. Kiefer, M.D., chief medical director of the Equitable Life Assurance Society which supported the National Health Council's Health Careers Project. He spoke on "Hands for Health," summarizing some of the material in the Health Careers Guidebook. He summed up his feeling about public health by saying "If I were talking to the teen-agers to whom this project is directed, I'd say, those of us who are oldsters in the health field believe that in joining us you would find your future financially sound and secure, professionally rewarding, with the sky the limit for the exercise of whatever gifts you may possess. We know you will be needed by your professional colleagues—and still more by the men and women and children whose health you serve. And if you want our personal opinion 99.99 per cent of us wouldn't change our work for any other in the world."

Health Education Recruitment Piece

The Society of Public Health Educators has prepared "Health Education As a Career" to interest young people in entering the profession. A three-color, fold-over job that fits a regulation business envelope, the brochure nevertheless tells the inquiring youngster a good deal about what kind of a person it takes to make a good health educator, what such a person does, where he works, where he gets training, and what his rewards are both in money and intangibles.

The brochure was published by the Metropolitan Life Insurance Company. Cosponsors with SOPHE were the American Public Health Association, American Association for Health, Physical Education and Recreation, and American School Health Association. These agencies have thus picked up, as far as health educators are concerned, the challenge of the "Health Careers Guidebook" of the National Health Council.

High School Future Nurses Clubs

As a recruitment program, the Committee on Careers of the National League for Nursing now sponsors Future Nurses Clubs, of which there are about 1,400 in high schools throughout the country. These clubs serve both to recruit students for schools of nursing

and to discourage those who would not be happy in this career.

As an aid to these clubs, the Committee on Careers, with the aid of E. R. Squibb & Co., has recently published "Program Guide for Future Nurses Clubs." This 80-page book is "designed to help clubs become 'a setting in which young people interested in nursing can meet together to explore the opportunities and requirements in the field, and to learn about the community life in which they soon will participate as informed citizens and possibly as nurses.'" Numerous community health and welfare projects in which high school students may participate are described, as well as the varied opportunities for volunteer service.

Committee on Careers, National League for Nursing, 2 Park Ave., New York 16, N. Y.; 50 cents.

Scientific Manpower Shortage—Again

The scientific manpower shortage continues to be widely discussed. In October a New York Times article by Benjamin Fine, the Times specialist on educational matters, was headlined "Industry Raises Cry for More Engineers." He pointed out that the 1955 engineering graduating class was 58 per cent smaller than that of 1950. In chemical jobs, particularly in industry, there are three jobs for every available chemical engineer.

The Chemical News of the Manufacturing Chemists Association is distributing widely a statement prepared for the White House Conference on Education which urges "concerted action to bring about sound teaching of the physical sciences and mathematics in American Schools, for in science lies our hopes for progress in peace and survival in war."

The Scientific Apparatus Makers Association (20 N. Wacker Drive, Chicago 6, Ill.) has prepared for technical representatives of the industry supplements to its monthly, "You and Your Industry." They are "The Science Teacher Situation," "Encouraging Young People to Study Science," and "A Look at Our Schools and Science."

In a speech before the American Legion, Representative Carl Hinshaw suggested two possible remedies for the dangerous shortage of scientific and technical manpower—the easing of our immigration laws to allow the free flow of scientists from other countries and an increase, by a variety of means, in the number of young people being trained in scientific and technical fields. The New York Times followed this with an editorial recommending draft regulation changes to assure that scientific training of young people will be uninterrupted and put to proper use.

And finally, the American Medical Association's Council of Medical Education sees a cloud no bigger than a man's hand on the horizon—but a cloud nevertheless. "An enrollment problem may result because applicants to medical schools have been decreasing for the past five years." Graduating classes have continued to increase, but the decreasing number of applicants may create some "difficulty in filling all available openings with qualified students." Only one-sixth of the 1954–1955 entering class had "A" college records, and one-seventh had "C" records.

All this has relevance for the public health profession in relation to recruitment. It has even larger significance for national growth and survival, a basic concern of public health workers both as citizens and as members of a profession dedicated to human well-being.

Two Decades of Social Security

Because the Social Security Act of 1935 has had such a profound effect upon the development of public health

services and because the provisions of the act continue to have influence upon personnel policies, recruitment, fringe benefits, and many other problems related to personnel administration, the Social Security Bulletin of October, 1955, should be of interest to public health workers everywhere and perhaps most immediately to personnel administrators.

In this issue is reviewed the 20-year history of the Social Security Act by Professor Edwin E. Witte of the University of Wisconsin, who was the director and secretary of the 1934–1935 President's Committee on Economic Security which laid the groundwork for the act. In discussing the future and the goals still to be reached, the author says, "Great risks, like early disability and prolonged sickness lack all governmental protection."

Social Security Bulletin, 18:10, October, 1955, U. S. Gov. Ptg. Office, Washington 25, D. C.; 20 cents; $2 per year.

Writing Personnel References

The National Social Welfare Assembly, through its Committee on Personnel, has prepared "Personnel References in Social Agencies: A Guide to Writing and Using." A series of discussions resulted in some principles that are believed suitable as a "guide or code of ethics for the agency writing a reference and for the agency requesting one." Four pages mimeographed. National Social Welfare Assembly, 345 E. 46th St., New York 17, N. Y.; 10 cents, 100 or more, 7 cents.

Recruitment Principles

The expanded vocational rehabilitation program provided by congressional act "puts a premium on effective recruiting of staff for both current and future needs." Hence, the Division of State Merit Systems and the Office of Vocational Rehabilitation of the U. S. Department of Health, Education, and Welfare have cooperated to prepare a brief pamphlet, "Recruitment for the Expanded Vocational Rehabilitation Program."

Although directed to recruiting rehabilitation workers, the principles outlined could well be applied in other settings. Directing recruitment to fruitful sources, materials for planned recruitment, recruitment methods and channels, special recruiting for career training, and from recruitment to selection are the topical headings—each relevant to other fields.

"No selective process can select better persons than those who apply," might be the watchword of any recruitment program.

Office of Vocational Rehabilitation, Washington, D. C.

Medical Extern Training Program

The Michigan State Health Department in 1952 began a summer program of medical extern training to introduce medical students to public health activities and concepts. During the summer of 1955, nine students from the University of Michigan and Wayne University were assigned to studies in tuberculosis, diabetes, immunization, x-ray screening, and syphilis.

As well as completing valuable research assignments the students, assigned to various parts of the state, were given a well rounded view of how public health works. One student summed it up:

"When you treat the community as your patient, like the health department does, you are working with relationships almost as complex as those in the human body. For me, it was like a course in community health anatomy."

Books and Reports

All reviews are prepared on invitation. Unsolicited reviews cannot be accepted.

The Prevalence of People—By Marston Bates, New York: Scribner's (597 Fifth Ave.), 1955. 283 pp. Price, $3.95.

The question is raised in chapter 1 as to whether health, by forestalling death through disease, may be creating a new problem as it solves an old one—may be changing the disease problem into a population problem—may, in fact, be providing the tinder for death by starvation in countries already densely populated.

In the last chapter the author gives his answer, stating forthrightly that there appears to be no question about the reality of the problem. He stresses that the whole system of nature bears witness to the need for adjustment between natality and mortality, between the rate at which young are produced, and the hazards of death. He concludes by saying that if the cultural changes which reduce the hazards of existence are to remain, and if the human species is to survive and progress, it is axiomatic that there must be a reduction in the rate at which procreation takes place.

The 14 chapters between the first and the last give a background and basis for conclusions drawn. Attention is given to the character and significance of population growth trends; to the influence of public health, nutrition, migration, and eugenics; to the increasing rates of resources utilization; and, finally, to the science of human affairs. In dealing with these subjects, the author brings forth an impressive body of biologic, anthropologic, and demographic information. Statistical data are presented with caution and illustrations are given with reservations, thereby creating confidence in the views evolved.

Two features impressed this reader. The first is the author's discussion of war in chapter 9 and his recognition of the position of unchallenged preeminence achieved by the human species in contriving ingenious means of self-destruction. The second is the author's own struggle in dealing with the ethics of handling population problems and with the science of human affairs. Throughout the book one is led to expect in the last chapter a significantly profound interpretation of trends and implications. Obviously the author developed impressions and ideas that he intended to present. When actually confronted with the task, however, he made several probing attempts and then side-stepped and withdrew, leaving the reader to carry on. The last chapter is of interest and importance because it reveals, far more than is usually done, the difficulties faced when a logical and well informed person attempts to provide rationale for human behavior.

This is an important book about an important subject and it is written in popular style. It successfully makes its point that the philosophy and objectives of public health need reexamination. PAUL S. HENSHAW

Adaptive Human Fertility—By Paul S. Henshaw. New York: McGraw-Hill (330 West 42nd St.), 1955. 322 pp. Price, $5.50.

Dr. Henshaw has provided in this book an excellent summary of the case for wide dissemination of birth control knowledge and for intensification of research on contraceptive methods. The first part of the book—a review of the biology of reproduction, of the nature

of population growth, and of the need for fertility management—seems rather dull because the same material has been covered in so many recent books. But it is a good, concise summary of the dangers of the present population situation. The second part of the book, on "fertility management," briefly reviews the history of infanticide, feticide, contraception, etc.; then surveys methods of fertility control in current use; and finally considers possible future developments. Here much information not otherwise easily available is summarized. The third and final part of the book is devoted to "population management," ending with a plan which the author calls "teleogenesis," meaning essentially "universal voluntary parenthood."

Throughout, the author faces moral, religious, cultural, and biologic problems frankly, dodging no issues. But the argument is always cool and reasoned. Since population and fertility are clearly matters of public health concern, Dr. Henshaw's book serves a very useful purpose as a full statement of the argument for including fertility management as a part of public health practice. MARSTON BATES

Study of Programs for Homebound Handicapped Individuals—A report by the Office of Vocational Rehabilitation, et al., pursuant to Section 7, Public Law 565, 83rd Congress, and transmitted to the 84th Congress, 1st Session. Printed as House Document No. 98. Washington, D. C.: Government Printing Office, 1955. No price stated.

This relatively short, but detailed, report highlights the problems of the homebound most dramatically. The authors have searched hard, poked in the dark corners and used their healthfully oriented imagination to identify available information on the homebound and to credit even the most limited of agency efforts at a program for this group of handicapped citizens. The result is the only current compendium of information on this subject—revealing the awful extent of our ignorance and the gross deficiencies in existing programs. The patent overstatement of the impact of these programs, in terms of the numbers of persons reached and the services rendered, serves to emphasize the very great area of need.

The descriptions of operating programs which touch in one way or another on the needs of homebound handicapped persons will, nevertheless, be helpful in suggesting approaches which community agencies may—or should not—utilize in fulfilling their unmet obligations to determine and help meet the needs of this essentially neglected group. The text, numerous footnotes, and a series of most useful appendixes provide the reader and his agency with ready reference to the agencies, persons, reports, laws, and even many of the ideas of current importance in this field.

JONAS N. MULLER

School Health Sourcebook—Edited by Oliver E. Byrd. Stanford, Calif.: Stanford University Press, 1955, 373 pp. Price, $7.50.

This volume is a comprehensive overview of the school health program as it is represented in the professional literature on this subject during a period of ten years. With but few exceptions the editor has drawn on articles that have appeared in various journals, bulletins, special reports, and comparable sources between the years 1945 and 1955.

From about 2,000 relatively current items the editor has selected 400 articles for inclusion. These 400 abstracted articles were chosen from 143 different sources representing the research, experiences, observation, or opinion of more than 400 different authors, com-

mittees, commissions, and organizations of various kinds.

The sourcebook is organized into twenty chapters. Each chapter is written in a clear, nontechnical style, and the editor's selection of key points is commendable. As with Byrd's Health Yearbook, each chapter is prefaced with a summary of chapter highlights.

For school administrators, health educators, physicians, public health officers, school and public health nurses, parent-teacher groups, physical educators, school health committees, and students in school health education, this is a valuable resource and a helpful guide to the essentials of school health. Others with an interest in school health will find the volume useful.

WARREN H. SOUTHWORTH

Medical and Public Health Laboratory Methods (Successor to Fifth Edition of Laboratory Methods of the United States Army)—Edited by James S. Simmons and Cleon J. Gentzkow. Philadelphia: Lea and Febiger (Washington Square), 1955. 1191 pp. Price, $18.50.

The product of 35 contributors, all recognized authorities in their fields, this publication presents in a single volume both the routine and specialized laboratory procedures used in all types of laboratories rendering services related to health.

The 52 chapters are divided into 11 sections: Clinical Pathology, Chemistry (including toxicology), Mycology, Bacteriology, Rickettsiae and Filterable Viruses, Protozoology, Helminthology, Entomology, Pathology, Special Veterinary Methods, and Statistical Methods. All of the sections except the last have been greatly expanded and completely rewritten and modernized.

Each section is a small textbook in itself. Recommended methods are carefully selected for accuracy and reproducibility of results and frequently a choice among several alternate methods is given. Directions for the examination procedures are clear and concise, theoretical discussions are limited but adequate. Several previously unpublished methods are included.

Chapters on recently developed fields, such as blood banks, flame photometry, paper chromatography, antibiotics, and the diagnosis of Rickettsial and virus infections are especially timely, but the comprehensive coverage of all fields is the principal characteristic of the volume.

Because of the wealth of information, it should be constantly used in every laboratory as a ready reference and guide to modern methodology.

EDMUND K. KLINE

Laboratory Identification of Pathogenic Fungi Simplified—By Elizabeth L. Hazen and Frank Curtis Reed. Springfield, Ill.: Thomas (301–327 East Lawrence Ave.), 1955. 108 pp. Price, $5.50.

This book is a laboratory aid for those concerned with the culture and identification of pathogenic fungi commonly encountered in the practice of medicine in North American clinics and laboratories. The etiologic agents of fungus infections have been classified into two categories: those causing superficial mycoses (dermatophytoses, ringworm) and those causing deep-seated mycoses (subcutaneous, systemic). A brief but clear statement describes the type of disease or diseases caused by the fungi in each of the two categories. This statement is followed by a description of the fungi as they appear in clinical materials and in culture. Excellent illustrations accompany the macroscopic and microscopic cultural descriptions of the fungi. Two final sections of the book include formulas of essential media and a selected list of references.

A definitive diagnosis of a fungus

infection depends on the acumen of trained laboratory personnel who are responsible for the examination and culture of materials obtained from patients. The examination, culture, and identification of known species of fungi which cause disease in man can be facilitated greatly by the use of this book. NORMAN F. CONANT

Textbook of Medicine—Edited by Russell L. Cecil and Robert F. Loeb (9th ed.). Philadelphia, Pa.: Saunders (West Washington Square), 1955. 1786 pp. Price, $15.00.

Four years have elapsed since the eighth edition of this monumental text was published. Attention was called at that time to the fact that authors from the field of public health were responsible for almost half of the articles and that in a special way this volume made an excellent book of reference for the health department library (A.J.P.H. Vol. 41, page 1134, Sept., 1951).

This ninth edition carries on the high quality of the earlier edition and includes at least thirty new sections on up-to-date material of current interest to public health workers. Among these may be mentioned Colorado tick fever, Coxsackie viral infections, epidemic hemorrhagic fever, nonsyphilitic treponematoses, the leptospiroses, kwashiorkor, asbestosis, and a dozen other subjects.

Again the volume can be recommended, particularly to public health workers. REGINALD M. ATWATER

Principles of Animal Virology—By F. M. Burnet. New York: Academic Press (125 East 23rd St.), 1955. 486 pp. Price, $10.00.

Dr. Burnet, in his preface, clearly states the purposes for which this book is intended: ". . . to provide for the public health administrator or the laboratory scientist who might be confronted with some wholly new manifestation of virus disease the sort of background that would help him to an effective handling of the problem." This book I am sure is much more adjusted to the virologist or the microbiologist who is closely associated with the general field. It is an excellent presentation and discussion of fundamental problems in the virus field as they integrate with the general biologic phenomena. Dr. Burnet is always stimulating, provocative, and well prepared to express his point of view on these major fields. The public health administrator who is also a good biologist may benefit greatly from the book, but it is not a treatise in popular terms nor does it deal with virus diseases as items. One of its greatest values to the general scientific reader is the manner in which Dr. Burnet relates the problem of viruses to many important aspects of disease. THOMAS FRANCIS, JR.

Chemotherapy of Malaria—By Sir Gordon Covell; G. R. Coatney; J. W. Field; and Jaswant Singh. World Health Organization. Monograph Series No. 27. Palais des Nations, Geneva. Distributed in the United States by Columbia University Press (2960 Broadway, New York, N. Y.), 1955. 123 pp. Price, $3.25.

This is a compact summary of factual information about the properties of antimalarial drugs, compiled at the recommendation of the WHO Expert Committee on Malaria. The drafting committee appointed to carry out this mission is an international quartet of eminent malariologists from England, the United States, Malaya, and India. Thus the volume which embodies their joint efforts bears the hallmark of cosmopolitan authenticity.

The book consists of five chapters, four annexes, a selected bibliography of 182 references, subdivided according to chapters, and a subject index. The chapters deal with (1) the definition

of special terms used in antimalarial research and application (these conform with the recommendations of another WHO monograph, Malaria Terminology) and a brief historical review of these studies; (2) the rationale of malaria chemotherapy; (3) consideration of six individual compounds or families of compounds (quinine, primaquine and other 8-aminoquinolines, mepacrine, chloroquine and other 4-aminoquinolines, proguanil, and pyrimethamine) commonly used in treating paludism; (4) a discussion of antimalarial drug resistance; and (5) the clinical use of malaricidal compounds. Each of these topics is the subject of a voluminous literature, thus their treatment is necessarily selective and succinct. Nevertheless, it is adequate for the purposes intended, and the authors are to be complimented on their discriminating choice of essential content and on their easy, lucid treatment of highly technical considerations. Tables and graphs are used abundantly and effectively as space-saving and expository devices.

The first annex is a summary of suggested dosages of antimalarials for use under various conditions (parasitism, immunity, emergency) and for special objectives (radical cure, prophylaxis, suppression). The second annex consists of statements of the quantitative base content of different sized tablets of antimalarial compounds. The third is a tabular arrangement of physical data (salt, base content ratios, solubility in cold water, and stability in aqueous solution). The fourth annex lists the synonyms of antimalarial drugs.

This monograph was produced, according to its introduction, for the benefit of the medical profession. But it will be of great interest also to educators, scientists, and public health administrators concerned with malaria control, parasitology, pharmacology and pharmacodynamics, the phenomenon of acquired resistance of living creatures, not only to drugs but to other noxious materials compounded by man, immunology, toxicology, biochemistry, and many other aspects of modified host-parasite relationships either on an individual or community basis.

Because of the prevailing interest in malaria eradication on regional, hemispheric, and world-wide scales, this brief catalogue of advances in chemotherapy is most timely. Nothing is more certain than that parasite control with drugs will have to take its place beside vector control with insecticides and other measures if large-scale malaria elimination is to be achieved. However, this book faithfully reflects the failures and the voids as well as the successes in antimalarial therapy, reminding us that many problems in this area remain to be solved, and that interest in the support and active prosecution of research in malaria chemotherapy must not languish if the disease is to be conquered on a global basis.

JUSTIN M. ANDREWS

Identification of Enterobacteriaceae—By P. R. Edwards and W. H. Ewing. Minneapolis, Minn.: Burgess (426 S. Sixth St.), 1955. 179 pp. Price, $4.00.

Written by recognized international authorities, this book presents all that is well established concerning identification and laboratory study of the Enterobacteriaceae, but does not overlook possibilities, hypotheses, and controversial points. It is written in a clear unequivocal style. Every worker, from the diagnostic bacteriologist in the most modestly equipped laboratory to the researcher and specialist in the field, will find here material of value and use. The Enterobacteriaceae are defined (an uneasy job!) and the subgroups within, both recognized and under debate, are defined (an even more queasy job!), discussed and described in full detail,

with tables of reactions, tests, etc. Widely used and accepted technical procedures for handling specimens, preliminary isolation of pure cultures, and first steps in identification are recommended, but the authors are not dogmatic about such methodology.

The book includes 10 chapters and a very enlightening preface. Chapter 1 presents methods for preliminary isolation of the Enterobacteriaceae. Chapters 2 and 3 deal with the genus Salmonella, giving complete details for biochemical and serologic identification and simplified serologic diagnosis, as well as complete antigenic analysis, phase identification, the Kauffmann-White schema, and an alphabetical list of serotypes. Chapter 4 describes fully the phage typing of S. typhi. Chapters 5–11 give similar discussions concerning the Arizona group, the E. freundii group, the genus Shigella, the E. coli group, the Providence group, and the Klebsiella-Aerobacter group. Each chapter is usefully documented.

An appendix contains formulas for about 15 media and reagents recommended for routine purposes. There is no index but a long table of contents serves the purpose. The book is done in excellent offset and is in spiral-wire loose-leaf binding. This monograph will join the group of standard authoritative works on Enterobacteriaceae and is a "must" for medical bacteriologists.

MARTIN FROBISHER, JR.

Child Development—By Millie Almy. New York: Holt (393 Madison Ave.), 1955. 490 pp. Price, $6.00.

This book is an interesting effort to utilize a preexisting longitudinal study done over an 18-year period at the Harvard School of Public Health to illustrate and help explain a child's emotional and educational development. The author is currently associate professor of education (developmental psychology) at Teachers' College, Columbia. She has explored the relatively unique storehouse of information accumulated by Dr. Harold Stuart and his associates at Harvard over the past two decades. In a praiseworthy attempt to combine two disciplines she has selected six 18-year-old children who were followed at Harvard since birth in order to illustrate the biological, social, and psychodynamic aspects of child development as she sees them.

As one would expect from the author's background, the emphasis is on the social and psychodynamic factors as they relate to the educational process. However, one suspects she would have selected quite different traits and attributes to record in the longitudinal study than those selected by Dr. Stuart and his associates. The book is directed primarily at teacher-training students and abounds with suggested classroom exercises. Nevertheless, there is enough valuable and informative material in the body of the book to reward public health persons especially interested in the mental health and behavioral aspects of children for their effort in digging beyond the first chapter. The first chapter represents an interesting and attention-holding flashback device wherein the author so to speak uncovers the inner thoughts (as she conceives they might be) of the six children who had been studied as they are jointly assembled at their high school graduation exercises.

EDWARD PRESS

Books Received

Listing in this column acknowledges the receipt of books and our appreciation to the senders. Space and the interests of readers will permit review of some, but not all, of the books listed.

ARTIFICIAL RESPIRATION. T. O. Garland. New York: Macmillan, 1955. 60 pp. Price, $1.95.

BIOLOGY OF POLIOMYELITIS. Annals of the New York Academy of Sciences, Vol. 61, Art. 4, pages 737–1064. Karl Habel, et al. New York: New York Academy of Sciences, 1955. Price, $5.00.

CHLORPROMAZINE AND MENTAL HEALTH. Proceedings of the Symposium, Smith, Kline, and French Laboratories, June 6, 1955, Philadelphia, Pa. Philadelphia, Pa.: Lea and Febiger, 1955. 200 pp. Price, $3.00.

FUNCTIONAL OTOLOGY. THE PRACTICE OF AUDIOLOGY. Morris F. Heller. New York: Springer Publishing, 1955. 225 pp. Price, $5.50.

GROUP WORK AND COMMUNITY ORGANIZATION 1955. Papers Presented at the 82nd Annual Forum of the National Conference of Social Work. New York: Columbia University Press, 1955. 109 pp. Price, $2.25.

HANDBOOK OF TOXICOLOGY. Vol. 1. Edited by William S. Spector. Wright-Patterson Air Force Base, Ohio: Wright Air Development Center, Air Research and Development Command, U. S. Air Force, 1955. 408 pp.

LABOR-MANAGEMENT NEGOTIATED HEALTH AND WELFARE PLANS, NORTHERN CALIFORNIA. Sacramento, Calif.: State of California, Printing Division, Documents Section, 1955. 71 pp. Price, $.52.

MEDICAL RESEARCH. VOLS. I AND II. A MID-CENTURY SURVEY. VOL. I. AMERICAN MEDICAL RESEARCH: IN PRINCIPLE AND PRACTICE. VOL. II. UNSOLVED CLINICAL PROBLEMS: IN BIOLOGICAL PERSPECTIVE. Boston, Mass.: Little, Brown, 1955. Vol. I, 765 pp. Vol. II, 740 pp. Price, $15.00 for 2 volumes.

MODERN NUTRITION IN HEALTH AND DISEASE. Edited by Michael G. Wohl and Robert S. Goodhart. Philadelphia, Pa.: Lea and Febiger, 1955. 1062 pp. Price, $18.50.

MENTAL HOSPITALS, FROM CUSTODIAL TO THERAPEUTIC PATIENT CARE IN. Milton Greenblatt, Richard H. York, and Esther Lucile Brown. New York: Russell Sage Foundation, 1955. 497 pp. Price, $5.00.

MOTHER-DAUGHTER RELATIONSHIPS AND SOCIAL BEHAVIOR. Ross Cooper Thomas. Washington, D. C.: Catholic University of America Press, 1955. 369 pp. Price, $4.00, paper bound.

NATIONAL FORMULARY (10th ed.). Also included, is a booklet on SUGGESTED ANTIDOTES. Compiled and edited by the Committee on National Formulary. Published by American Pharmaceutical Company. Philadelphia, Pa.: Lippincott, 1955. 867 pp. Price, $9.00.

NUTRITION IN INFECTIONS. Annals of the New York Academy of Sciences, Vol. 63, Art. 2, pages 145–318. W. Alan Wright, et al. New York: New York Academy of Sciences, 1955. Price, $3.50.

PRESBYTERIAN HOSPITAL AND THE COLUMBIA PRESBYTERIAN MEDICAL CENTER 1868–1943. Albert R. Lamb. New York: Columbia University Press, 1955. 495 pp. Price, $8.75.

PSYCHOANALYTIC STUDY OF THE CHILD. VOL. X. Edited by Ruth S. Eissler, et al. New York: International Universities Press, 1955. 394 pp. Price, $7.50.

REHABILITATION OF A CHILD'S EYES. Richard G. Scobee and Herbert M. Katzin (2nd ed.). St. Louis, Mo.: Mosby, 1955. 133 pp. Price, $2.85.

RESPIRATORY PROBLEMS IN THE PREMATURE INFANT. Report of the Fifteenth M & R Pediatric Research Conference. Columbus, Ohio: M & R Laboratories, 1955. 87 pp.

RHEUMATOID ARTHRITIS AND PSORIASIS VULGARIS. Tibor Benedek. Chicago, Ill.: Chicago Medical Book Co., 1955. 308 pp. Price, $12.00.

RIGHT OF LIFE, THE. A. Delafield Smith. Chapel Hill, N. C.: University of North Carolina Press, 1955. Price, $3.50.

SEX AND MARRIAGE. Allan Fromme. New York: Barnes and Noble, 1955. Price, $1.50.

SHELTERED CARE FOR OLDER PERSONS. STANDARDS AND SUGGESTIONS. Chicago, Ill.: Board of Hospitals and Homes of the Methodist Church, 1955. 70 pp. Price, $1.00.

TEXTBOOK OF THE PRINCIPLES AND PRACTICE OF NURSING. Bertha Harmer and Virginia Henderson (5th ed.). New York: Macmillan, 1955. 1250 pp. Price, $7.00.

THERAPY OF FUNGUS DISEASES. AN INTERNATIONAL SYMPOSIUM. Edited by Thomas H. Sternberg and Victor D. Newcomer. Boston, Mass.: Little, Brown, 1955. 337 pp. Price, $7.50.

WHEN TEACHERS FACE THEMSELVES. Arthur T. Jersild. New York: Columbia University, Teachers College, Bureau of Publications, 1955. 169 pp. Price, $3.25.

A Selected Public Health Bibliography with Annotations

Older and Older—In the course of one recent decade the life expectancy at birth increased by three and one-half years for males and five years for females. Added years were achieved at later ages, too. The record, by geographic areas, is also worked out for your enlightenment.

ANON. Gains in Longevity Are Country-Wide. Statist. Bull. Metrop. Life Insur. Co., 36, 9:1 (Sept.), 1955.

Energy, Thy Name Is Woman—"The married population has risen to a record high, the birth rate is at the highest level in a generation, and more wives than ever before are (working out)." Some of the social implications of all this restless activity are interestingly pondered.

ANON. The American Wife. Statist. Bull. Metrop. Life Insur. Co., 36, 10:1 (Oct.), 1955.

Thorough—By means of a four-day, inpatient hospital health examination more than half the 500 business executives were revealed to have defects requiring treatment—seven of each 10 defects having been undiscovered prior to the examinations. The percentage of defects detected by x-ray or laboratory services that were not indicated by other signs was small.

BOLT, R. J., et al. An Appraisal of Periodic Health Examinations. Arch. Indust. Health. 12, 4:420 (Oct.), 1955.

Obiter Dicta—In psychiatry (mental health division) the most potent preventive remedy is the doctor himself—a drug without pharmacology, without dosage, and lacking dangerous side effects.

BRACELAND, F. J. Present Status of Preventive Psychiatry. J.A.M.A. 159, 12:1187 (Nov. 19), 1955.

Air: Los Angeles Variety—Is smog a health hazard? This epidemiologist answers yes unequivocally because: (1) it interferes with physical, emotional, and social well-being; (2) it has possible, though undetermined cumulative effects; (3) it has a disaster potential. (Seven additional papers read at our Western Branch meeting are usefully briefed in the same issue.)

BRESLOW, L. The Epidemiologist Looks at Smog. Pub. Health Rep. 70, 11:1140 (Nov.), 1955.

Legally Required—Probably everyone immediately concerned knows all about this matter, but the rest of us, too, may want to be informed about the latest changes in the national birth and death certificates.

DUNN, H. L. 1956 Revisions of Standard Birth and Death Certificates. J.A.M.A. 159, 12:1184 (Nov. 19), 1955.

Department of General Interest—Do you know the story of the way we came to have our aspirin? If you don't the introductory part of this discussion of the use and abuse of salicylates will prove well worth your effort to look it up. You'll read the rest of the paper, too, with interest—especially the part about the six million pounds per annum production.

GROSS, M. The Salicylates. Am. J. Nursing 55, 11:1372 (Nov.), 1955.

Basic How Many?—Is the "Basic Seven" plan outliving its educational usefulness? Suggested here is a "Four

Group" plan covering the protective foods—for the further education of people already exposed to some nutritional information. There is also a "Two Group" plan for the nutritionally illiterate.

HAYES, O., et al. Suggested Revision of the Basic Seven. J. Am. Dietet. A. 31, 11: 1103, (Nov.), 1955.

Only One in 10,000?—Do premarital blood tests catch enough new syphilis cases to warrant their tremendous cost? Do enough false-positives occur to raise hob with enough marriages to do more total harm than the detection of true positives does good? This writer answers the first question with a resounding No, and the second with an equally resounding Yes. What do you think?

HEDRICH, A. The State's Gretna Green Marriages. Monthly Bull., Maryland State Dept. of Health. 27, 2:1 (Oct.), 1955.

Teachers Try Teaching—A city adult education staff took over a faltering food-handlers training project, and now it is going very well says the head of the County Health Department's Division of Sanitation. Are you interested?

HERMANCE, G. W. Cooperation in Food-Handler Training. Modern San. 7, 10:21 (Oct.), 1955.

Home vs. Sanatorium—"It is possible and safe to treat selected patients (with tuberculosis) at home, if long-range goals, both medical and social, are kept in mind . . . it appears impractical to substitute home for sanatorium treatment on a large scale."

LANSDOWN, F. S., and JONES, J. M. The Future of Tuberculosis Control. New York State J. Med. 55, 22:3262 (Nov. 15), 1955.

We The People—Today we need to know how people react in matters affecting their health and why they feel and act as they do. What the behavioral sciences can contribute to pubilc health planning, in these circumstances, is the burden of this discussion.

KNUTSON, A. L. Human Behavior Factors in Program Planning. Pub. Health Rep. 70, 11:1129 (Nov.), 1955.

Sad News—"This follow-up study indicates that the two weight reduction programs, individual instruction and group therapy, were not effective over a period of three years for a large majority of 147 subjects."

MCCANN, M., and TRULSON, M. F. Long-Term Effect of Weight Reducing Programs. J. Am. Dietet. A. 31, 11:1108 (Nov.), 1955.

Neglected Opportunities—Industrial physicians must take upon themselves the job of stimulating and participating in epidemiologic research in occupational diseases. The reason, says this authority, is because public agencies usually have neither opportunity nor resources, and private physicians may be excluded.

PHAIR, J. J. Epidemiology in Occupational Medicine. J.A.M.A. 159, 11:1105 (Nov. 12), 1955.

Why Not?—Proposed here is a national agency to regulate automobile safety devices, with power to prevent sales of vehicles not meeting equipment requirements. Dangerous foods and drugs are safeguarded against by such agencies, then why not the most lethal of all the things we use?

SHELDEN, C. H. Prevention, the Only Cure for Head Injuries Resulting from Automobile Accidents. J.A.M.A. 159, 10:981 (Nov. 5), 1955.

Cigarettes and Smog—The British researchers conclude, after a rural-urban study of lung cancer deaths ". . . a supposition that benzpyrene plays a dual part, through cigarettes and air pollution, now appears tenable, and such

a working hypothesis may assist research work in this field whether or not it is finally substantiated!"

STOCKS, P., and CAMPBELL, J. M. Lung Cancer Death Rates Among Non-Smokers and Pipe and Cigarette Smokers. Brit. M. J. 4945:923 (Oct. 15), 1955.

It's Too Bad, But—In this reported experience measles patients who received prophylactic doses of antibiotics had about twice as many bacterial complications as did those who were not given this treatment. These preventives not only didn't prevent—instead they increased the risk of sequelae.

WEINSTEIN, L. Failure of Chemotherapy to Prevent the Bacterial Complications of Measles. New England J. Med. 253, 16:679 (Oct. 20), 1955.

If additional information is desired regarding the articles listed in the Bibliography, please communicate directly with the publications in which they appeared; the addresses are furnished for your convenience.

Am. J. Nursing (American Journal of Nursing), 2 Park Ave., New York 16, N. Y.
Arch. Indust. Health (Archives of Industrial Health), American Medical Association, 535 N. Dearborn St., Chicago, Ill.
Brit. M. J. (British Medical Journal), British Medical Association House, 19 Tavistock Sq., London, W. C. 1, England.
J.A.M.A. (Journal of the American Medical Association), 535 N. Dearborn St., Chicago, Ill.
J. Am. Dietet. A. (Journal of the American Dietetic Association), 620 N. Michigan Ave., Chicago, Ill.
Modern San. (Modern Sanitation), 855 Avenue of the Americas, New York 1, N. Y.
Monthly Bull. Maryland State Department of Health, 2411 North Charles St., Baltimore, Md.
New England J. Med. (New England Journal of Medicine), Massachusetts Medical Society, 8 The Fenway, Boston 15, Mass.
New York State J. Med. (New York State Journal of Medicine), 292 Madison Ave., New York 17, N. Y.
Pub. Health Rep. (Public Health Reports), Superintendent of Documents, Gov. Ptg. Office, Washington, D. C.
Statist. Bull. Metrop. Life Insur. Co. (Statistical Bulletin Metropolitan Life Insurance Company), One Madison Avenue, New York 10, N. Y.

Association News

Mental Health Is the 14th Section

A Mental Health Section of the Association was established by the Governing Council during the 83rd Annual Meeting in Kansas City, Mo. A 37-member committee with John D. Porterfield, M.D., chairman, and Rema Lapouse, M.D., secretary, had been canvassing the situation for several months. This committee recommended that the section be established in order to:

1. Help develop interest and leadership on the part of the health professions in the public health aspects of mental disease.
2. Provide a forum for the exchange of experience among workers in the field of mental health.
3. Cooperate with other sections of the Association in utilizing skills and integrating mental health with other areas of public health.
4. Focus public health skills on the epidemiology of mental diseases, the promotion of mental health and organization of preventive, therapeutic, and rehabilitative services.
5. Stimulate scientific studies, experiments, and demonstrations.

At the time of the Annual Meeting it was reported that nearly 300 persons, of whom 40 per cent were not currently members of the Association, had expressed interest in affiliating with a Mental Health Section. Nearly all the remainder had not yet found a section home and though members or Fellows were unaffiliated.

Officers of the new Section are:

Chairman—John D. Porterfield, M.D.
Vice-Chairman—Paul V. Lemkau, M.D.
Secretary—Rema Lapouse, M.D.
Section Council—Dorothea L. Dolan, Ernest M. Gruenberg, M.D., Morton Kramer, D.Sc., Benjamin Pasamanick, M.D., and Ruth E. Simonson, R.N.

The Goldberger Gavel

At the meeting of the Governing Council of the American Public Health Association in Kansas City, Mo., on November 13, 1955, a beautiful gavel turned from a door lintel and a bannister support overlaid with silver was presented to the Association. The wood in the gavel was taken from the building in Jackson, Miss., where Dr. Joseph Goldberger of the Public Health Service made his initial inquiries and original findings on the cause of pellagra beginning in 1914.

The presentation was made by Cassie Smith, health educator with the Mississippi State Board of Health, Jackson, on behalf of the Mississippi Public Health Association, which was elected an Affiliated Society of the APHA at the Kansas City meeting. The gavel was prepared under the auspices of the Mississippi State Medical Association for presentation to the American Public Health Association by the Mississippi Public Health Association as a symbol of appreciation for Dr. Goldberger's achievements and other scientific advancements in medicine.

Dr. Herman E. Hilleboe, in accepting the gavel, expressed most cordial thanks of the APHA to the Mississippi Public Health Association and the Mississippi State Medical Association for the gift.

News of Affiliates

Michigan—The Michigan Public Health Association met with the 34th Annual Public Health Conference in Grand Rapids, October 6–8, 1955. John Hanlon, M.D., chief, Public Health Division, International Cooperation Administration, among the chief speakers,

indicated the growth of a new era in demand for public health services, chiefly because of the large increases in population among two groups needing the most health services—the young and the old. The conference was opened by Albert E. Heustis, M.D., state health commissioner.

Oscar Stryker, M.D., health officer, Macomb County, succeeded Morton Hilbert, director, Bureau of Sanitation, Wayne County Health Department, as president. Other officers elected are:

Vice-President—Josephine Brown, R.N., supervising nurse, Calhoun County Health Department

Secretary-Treasurer — Lyman Chamberlin, sanitarian, Eaton County Health Department

Representative to the Governing Council, APHA—Albert E. Heustis, M.D.

Ohio—At the meeting of the Ohio Public Health Association in Columbus, October 12–14, the following officers were elected:

President—Sewall Milliken, executive secretary, Metropolitan Health Council, Columbus

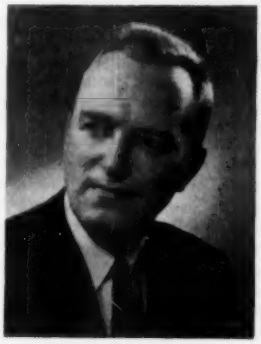
Vice-Presidents—R. E. Wehr, M.D., assistant health commissioner, Cincinnati; James E. Warfield, Sanitation Department, State Department of Health, Columbus

Secretary-Treasurer—Mrs. Maxine Pendleton, London

Representative to the Governing Council, APHA—Leo F. Ey, Division of Laboratories, State Department of Health

Brydon H. Lidle, New Staff Member

The Professional Examination Service of the American Public Health Association has announced the appointment of Brydon H. Lidle as executive assistant to be in charge of administration of office functions. Mr. Lidle is responsible for personnel administration of the office staff of the Professional Examination Service, scheduling and control of the preparation and distribution of examinations, supervision of purchases, billing and bookkeeping, processing of contracts, and the preparation of budget estimates.



BRYDON H. LIDLE

Mr. Lidle was most recently comptroller and administrative assistant, Pennsylvania State Civil Service Commission, with responsibility for recruitment of candidates, test production, and administration and general management of the administrative services. Earlier he was a member of the research staff, Pennsylvania Economy League, with responsibility for budget review and determination of financial need in localities. He has also served as personnel director and office manager of the Carlisle Shoe Company.

During World War II Mr. Lidle saw service in the Pacific Area as personnel classification specialist with the United States Marine Corps until May, 1946. He is a native of Pennsylvania and attended Dickinson College. He is married and has four sons.

RESOLUTIONS

The following Resolutions were unanimously adopted by the Association at the Eighty-Third Annual Meeting in Kansas City, Mo., November 16, 1955.

Federal Aid to Graduate Schools of Public Health

WHEREAS, graduate education is essential for furthering progress in public health, and

WHEREAS, the Accredited Schools of Public Health are the principal resources of the nation for providing education in public health, to meet nation-wide needs, and

WHEREAS, the needs of the country for properly qualified persons to serve in public health work cannot be met with the limited resources of the accredited schools, and

WHEREAS, the costs of maintaining our accredited schools greatly exceed revenues derived from tuition and fees, and as a consequence, the financial stability of the schools is in serious jeopardy, and

WHEREAS, there are great inequalities in the bearing of the financial burden for this aspect of graduate education that serves the entire nation, therefore be it

RESOVLED, that the American Public Health Association recognize this problem as one of national concern and for the solution of which there must be some federal responsibility, and be it further

RESOLVED, that the American Public Health Association recognize the necessity for federal financial assistance in the support of accredited schools of public health, to the end that graduate education in this field can achieve financial stability and keep pace with the nation's expanding needs for properly qualified public health personnel, and be it further

RESOLVED, that the American Public Health Association instruct its officers to give their full support to all appropriate federal legislation designed to achieve these ends.

Federal Assistance to Training Programs of Public Health Agencies

WHEREAS, specialized educational preparation of all professional and technical personnel is essential to the operation of effective public health programs, and

WHEREAS, the cost of such preparation is beyond the resources of the vast majority of those needing it, thereby making it necessary for public health agencies to provide financial assistance, and

WHEREAS, adequate funds are not now available to agencies to meet these needs, therefore be it

RESOLVED, that the American Public Health Association recognize this problem as one of national concern, and for the solution of which some federal participation is necessary, and be it further

RESOLVED, that the Congress be urged to appropriate substantial funds specifically to meet this need.

Status of the Children's Bureau in Department of Health, Education, and Welfare

WHEREAS, one of the major recommendations of the Task Force on Federal Medical Services of the Commission on Organization of the Executive Branch of the Government in its report of February, 1955, was that the Children's Bureau should be elevated to a point where the bureau chief has access to the secretary and has the authority and appropriations for research grants, and

WHEREAS, this recomendation of the Task Force, if adopted by the U. S. Department of Health, Education, and Welfare, would promote the achievement of more effective coordination of the health interests represented by the several major agencies within the Department of Health, Education, and Welfare, therefore, be it

RESOLVED, that the American Public Health Association endorses the recommendation of the Task Force Report that the Children's Bureau, with all its existing responsibilities, be removed from the Social Security Administration and placed in an administrative position in the Department of Health, Education, and Welfare that will facilitate and promote the fullest collaboration and coordination of the several health programs of the Department of Health, Education, and Welfare.

Rehabilitation of the Chronically Ill

WHEREAS, rehabilitation of the chronically ill is one of the most urgent tasks facing health workers today, and

WHEREAS, the concept of rehabilitation is expanding to include effort directed in all age groups and toward all degrees of improved personal and social functioning, and

WHEREAS, the state and local health authorities have gained experience in rehabilitation through the administration of programs for crippled children, for construction of rehabilitation facilities, and other means, now therefore be it

RESOLVED, that the American Public Health Association call upon the state and local health authorities to intensify their activities in the field of rehabilitation, and particularly that they undertake leadership in the organization of state-wide and community-wide programs for rehabilitation.

Prevention of Injury and Death Due to Motor Vehicle Accidents

WHEREAS, motor vehicle accidents have become a major hazard to public health, since approximately 1,000,000 persons are injured annually in the United States, of which between 35,000 and 40,000 die as the result of motor vehicle accidents, and

WHEREAS, the objective of the American Public Health Association is to protect and promote public and personal health, and

WHEREAS, trends in current research indicate that a substantial proportion of deaths and injuries could be prevented by alterations and improvements in design of motor vehicles and related accessories and by utilization of proper restraining devices, therefore be it

RESOLVED, that the American Public Health Association recommends the further development of motor vehicle accident prevention programs and encourages the extension of the efforts of the automotive engineers and manufacturing companies directed to the prevention of injury and death, and that a copy of this resolution be sent to the respective manufacturers and engineering associations.

Support of International Health Work

WHEREAS, improvement of health throughout the world is a necessary part of the social and economic conditions required for lasting peace, and

WHEREAS, the Government of the United States has been giving active leadership and support directly and through international organizations, and

WHEREAS, certain barriers have been encountered in the free exchange of information and visitors between countries, which barriers constitute a serious deterrent to progress in international health work, therefore be it

RESOLVED, that the American Public Health Association recommends that the Public Health Service and Department of State continue and intensify their support and active interest in international health work, and that these agencies work with other governments to bring about a fuller and freer exchange of information and visitors between countries.

Eradication of Malaria

WHEREAS, the State Health Departments with the collaboration of the Public Health Service have practically eradicated malaria, and

WHEREAS, the Commonweath of Puerto Rico has done the same for that previously highly malarious tropical island, and

WHEREAS, many other countries and areas of the world have made great progress in the eradication of the disease, and

WHEREAS, the permanent eradication of a disease requires ever-expanding peripheral activity to prevent reinfection from neighboring areas, and

WHEREAS, the XIV Pan American Sanitary Conference (1954) declared the eradication of malaria in the Western Hemisphere to be a matter of the utmost urgency and recommended to member governments the conversion of all malaria control programs into eradication campaigns in the shortest possible time before further development of anopheline resistance to insecticides, and

WHEREAS, the Eighth World Health Assembly (Mexico City, 1955) took similar action with regard to malaria as a world-wide problem, therefore be it

RESOLVED, that the American Public Health Association accepts the concept of eradication in preference to control, endorses the global campaign, and recommends that all private and governmental agencies cooperate in this world-wide program directed toward the eradication of malaria.

Fluoridation of Public Water Supplies

WHEREAS, the three oldest fluoridation studies planned for 10 years have been completed and have demonstrated the effectiveness of controlled fluoridation, and

WHEREAS, as of October 3, 1955, 1,115 United States communities, with a population of 22,000,000, are now providing their citizens with the advantages of controlled fluoridation, and

WHEREAS, continuing studies have amply demonstrated the safety of controlled fluoridation from the standpoint of general health, therefore, be it

RESOLVED, that the American Public Health Association reiterate its support of fluoride adjustment of public water supplies as a safe and effective method for the reduction of dental caries.

Support of Citizen Action for Health

WHEREAS, the American Public Health Association recognizes the value for community health improvement inherent in the working together of local health agencies, other groups, and interested citizens, and the advantages in such community planning efforts, including promotion of and assistance to activities of local health councils, therefore, be it

RESOLVED, that the American Public Health Association endorses participation of health workers in local health councils or other community planning bodies, and be it further

RESOLVED, that where no such local groups exist, the Association urges collaboration of health agencies in the formation of citizen groups to study and act on local health problems, with a view toward establishment and continued support of local health councils.

Reenactment of Water Pollution Control

WHEREAS, the public health and well-being of the people require continuing water pollution control efforts by state, interstate, and federal authorities to safeguard the quality of the nation's surface and ground waters against the complex and growing problem of water pollution, and

WHEREAS, the present Federal Water Pollution Act preserves and protects the responsibilities and rights of the states and provides for federal support, and

WHEREAS, the present Water Pollution Control Act expires June 30, 1956, therefore, be it

RESOLVED, that the American Public Health Association urges the enactment in the Second Session of the 84th Congress of federal water pollution control legislation continuing the existing basic policy and providing for broadened research and increased support of state programs.

Eradication of Aedes aegypti in the United States

WHEREAS, in 1947 the nations of the Americas agreed to undertake the permanent solution of the threat of urban yellow fever through eradication of the Aedes aegypti mosquito from the Western Hemisphere, and

WHEREAS, the United States now remains as the only country in the Western Hemisphere which has not initiated an eradication program, although it has declared officially that the vector is present in the following 13 states: Alabama, Arizona, Arkansas, Florida, Georgia, Louisiana, Mississippi, New Mexico, North Carolina, Oklahoma, South Carolina, Tennessee, and Texas, and

WHEREAS, presence of the vector in the United States provides a source of reinfestation in recently cleared areas close to jungle yellow fever in other countries, thus creating the hazard of introduction of urban yellow fever, and

WHEREAS, fulfillment of the obligations of the United States, under the International Sanitary Regulations, to keep ports and airports in receptive areas free of Aedes aegypti is difficult or impossible as long as the vector is present in surrounding areas, therefore be it

RESOLVED, that the American Public Health Association supports the program for the eradication of this vector in the Western Hemisphere and urges the Public Health Service and the state health departments to take immediate steps to initiate programs directed toward the eradication of the Aedes aegypti mosquito from the United States.

Endorsement of Poison Control Centers and Health Department Participation in Their Development

WHEREAS, the great variety and wide use of natural and synthetic chemical and pharmaceutical products today in industry, farms, and homes constitute, through accident and misuse, an important problem of public health, and

WHEREAS, poison control centers are being established in a number of cities of this country to provide physicians and hospitals with prompt information on diagnosis and treatment, and

WHEREAS, it is essential for the proper study and control of poisoning that information on cases be collected systematically and used to prevent other accidents or misuse, therefore be it

RESOLVED, that the American Public Health Association encourage the development of poison control centers and urge health departments to actively participate in the development of their services to secure epidemiologic data concerning poisoning and to establish preventive measures for the health protection of the community.

Research on Pest Mosquitoes

WHEREAS, increasing mosquito problems arising from the further development of resort areas, especially coastal areas affected by salt marsh mosquitoes, of irrigation and other water resource undertakings, and from the suburbanization of the United States, has been a cause of important concern to many public health agencies, and

WHEREAS, the Conference of State and Territorial Health Officers has expressed concern on behalf of official health agencies by passage of a resolution requesting a comprehensive program of research, demonstration, and technical consultation in salt marsh mosquito control by the Public Health Service, therefore, be it

RESOLVED, that the American Public Health Association recommends that a program of research, demonstration, and technical consultation in control of mosquitoes breeding in salt marshes, irrigation systems, and other water resource developments be undertaken by the Public Health Service and by state health departments.

Racial Integration in Health Facilities

WHEREAS, the gratifying progress in racial integration within health facilities has demonstrated that integration is essential for highest quality, efficiency, and economy in the operation of these community services, and

WHEREAS, the practice of full racial integration in staffing such facilities is favorable to the development of professional skills and the full exchange of scientific knowledge, and

WHEREAS, shortages of such facilities and personnel make it imperative that inefficiencies and duplications be eliminated, therefore be it

RESOLVED, that the American Public Health Association affirms its conviction of the desirability of full racial integration in health services and facilities, and be it further

RESOLVED, that the American Public Health Association recommends that its members and sections act to implement these principles in their own programs and communities.

Appreciation to Exhibitors

WHEREAS, the excellent exhibits, both scientific and technical, as presented at the Eighty-Third Annual meeting are of great value and interest to the public health profession, and

WHEREAS, the exhibits contribute so materially to the success of the meeting, therefore be it

RESOLVED, that the American Public Health Association expresses its grateful appreciation to those who have presented these exhibits.

Thanks for Privileges Extended

WHEREAS, the many opportunities to see at firsthand the scientific and industrial features of the Kansas City area have provided much of unusual interest and value to the participants at this Eighty-Third Annual Meeting, therefore be it

RESOLVED, that the American Public Health Association expresses its sincere thanks to the agencies of Kansas City and its environs, and to those industrial organizations that have made their services and facilities available for the special benefit of members.

Appreciation to the Press, Radio, and Television Networks

WHEREAS, the press, radio, and television networks, national, state, and local, have carried to the people of America the news of the important events of the Eighty-Third Annual Meeting, thereby extending the value of the meeting to those unable to attend, therefore be it

RESOLVED, that the American Public Health Association acknowledges its indebtedness and extends its thanks to the officials and staffs responsible for these means of mass information.

Appreciation to Officials and Groups

WHEREAS, the success of this Eighty-Third Annual Meeting is due in large part to the many courtesies, generous contributions of time and energy, and efficiency in providing for and conducting this meeting, as extended by Hugh L. Dwyer, M.D., chairman of the Heart of America Committee, and his colleagues on the committee, and

WHEREAS, the meeting was made more enjoyable for all those attending by the gracious hospitality shared with us, therefore be it

RESOLVED, that the American Public Health Association expresses its grateful appreciation and warm thanks to Dr. Dwyer, to the Heart of America Committee, and to all those assisting him and the committee.

In Memoriam

WHEREAS, since the last Annual Meeting of the American Public Health Association it has suffered the irreparable loss of 103 Fellows and members, many of whom have made outstanding contributions to the success of the Association, therefore be it

RESOLVED, that the Association expresses its deep regrets at this loss, and be it further

RESOLVED, that the names, attached, constitute a part of this resolution.

Deceased Members and Fellows October, 1954, through November, 1955

Name	Member	Fellow
Selma I. Akerfelt, R.N., Fairfield, Conn.	1928	
Norman G. Angstadt, M.D., M.P.H., Reading, Pa.	1938	
Oswald T. Avery, M.D., Nashville, Tenn.	1920	
Frederick Bettleheim, M.D., New York, N. Y.	1949	
Frederick A. Blesse, M.D., Richmond, Va.	1949	
Robert H. Bishop, Jr., M.D., Cleveland, Ohio	1947	
Ernst P. Boas, M.D., New York, N. Y.	1949	
C. P. Botsford, M.D., Hartford, Conn.	1911	1922 Charter
Luther M. Boyers, M.D., Berkeley, Calif.	1926	1932
Elton J. Braddock, Seattle, Wash.	1947	
Mrs. Evelyn C. Brown, Toms River, N. J.	1938	
Walter B. Carter, Washington, D. C.	1929	
A. J. Chesley, M.D., Minneapolis, Minn.	1909	1922 Charter
Francis J. Conahan, M.D., Bethlehem, Pa.	1954	
Richard N. Connolly, M.D., Newark, N. J.	1898	1922 Charter
Ernest A. Cook, M.D., Oak Hill, W. Va.	1941	
John M. Cook, Little Rock, Ark.	1951	
Henry P. Dengler, M.D., Summit, N. J.	1930	
Melville D. Dickinson, Jr., M.D., M.P.H., Tokyo, Japan	1948	
Margaret C. Donaldson, Bethleham, Pa.	1939	
Major General George C. Dunham, M.C. (Ret.) Grants Pass, Ore.	1920	1922 Charter
H. Shirley Dwyer, D.D.S., Little Rock, Ark.	1934	1938
Mrs. Louise P. East, R.N., Ashville, N. C.	1945	
Charles A. Emerson, New York, N. Y.	1907	1922 Charter
Robert P. Farrell, M.S., Nashville, Tenn.	1944	1950
Maxwell J. Fein, M.D., New York, N. Y.	1935	
Joseph Felsen, M.D., New York, N. Y.	1931	1948
W. K. Fenton, M.D., Toronto, Ontario, Canada	1951	
William Fernhoff, M.D., Woodbridge, N. Y.	1941	
Leslie W. Foster, D.D.S., Talinhina, Okla.	1951	1953
Jose N. Gandara, M.D., Santurce, Puerto Rico	1943	
Sadie Gladwin, Rockville, Md.	1953	
Franziska Glienke, R.N., Panama, Republic of Panama	1945	
Jacob A. Goldberg, Ph.D., New York, N. Y.	1927	1930
Isaac Gonzalez-Martinez, M.D., San Juan, Puerto Rico	1921	1923 Charter
Arthur H. Graham, M.D., D.P.H., Montgomery, Ala.	1929	1941
Martin Gumpert, M.D., New York, N. Y.	1949	
Franklin J. Halpin, M.D., Washington, D. C.	1939	1946
Crozier S. Hart, M.D., Trinidad, Colo.	1952	
David D. Helm, V.D.M., Camden, N. J.	1949	
Clair A. Henderson, M.D., Savannah, Ga.	1947	
Ole J. Hendrickson, Sacramento, Calif.	1945	
Lewis R. Hill, M.D., Oak Park, Ill.	1935	
Joseph-Leon Houde, M.D., D.P.H., Rimouski, Quebec, Canada	1933	
Amos G. Hufstedler, M.D., Knoxville, Tenn.	1931	
Anja S. Huhtinen, M.D., M.P.H., Helsinki, Finland	1952	
Philip M. Hutchinson, Anchorage, Alaska	1953	
Charles L. Hyser, D.D.S., New York, N. Y.	1946	
Albert D. Kaiser, M.D., Rochester, N. Y.	1920	1943
Samuel S. Keiner, M.D., Brookline, Mass.	1949	

Deceased Members and Fellows October, 1954, through November, 1955

Name	Member	Fellow
Harold J. Knapp, M.D., Cleveland, Ohio	1920	1922 Charter
H. A. Kroeze, Jackson, Miss.	1930	1941
Dr. Bruno LaHaye, Ministry of Health, Quebec, Canada	1929	
Edward C. LaValley, M.C.E., Batavia, N. Y.	1949	
Paul H. Leach, M.D., Santa Monica, Calif.	1947	
Sidney O. Levinson, M.D., Chicago, Ill.	1941	1949
Dr. Richard P. Lienhardt, Wayne, Delaware County, Pa.	1924	
David Littlejohn, M.D., Dr.P.H., Dearborn, Mich.	1920	1923
Thomas T. Mackie, M.D., Westport, Conn.	1944	
Philip E. Marks, M.D., Pittsburgh, Pa.	1927	
Howard M. Marjerison, D.M.D., Boston, Mass.	1950	
Samuel B. Marks, M.D., Lexington, Ky.	1951	
Floyd A. Martin, M.D., Columbia, Mo.	1948	
Elim Yi-Lin Mei, M.D., Dr.P.H., Window Rock, Ariz.	1953	
Sherman D. Meech, Rochester, N. Y.	1948	
Miss J. Aileen Merwin, M.S., Boston, Mass.	1951	
Walter H. Miles, M.D., Jones, Okla.	1928	1946
Gordon W. Molyneux, Albany, N. Y.	1934	1944
Porter L. Musick, Athens, Ga.	1952	
Ralph Norton, Jr., Mineola, N. Y.	1955	
Miss Ann S. Nyquist, R.N., Minneapolis, Minn.	1935	1945
Mrs. Ethel S. Palmer, Newberg, Ore.	1946	
Lillian B. Patterson, R.N., M.S., Seattle, Wash.	1946	
Peel M. Payne, M.D., Asherton, Tex.	1930	1932
Kathryne Pearce, Minneapolis, Minn.	1928	
Carl M. Peterson, M.D., Chicago, Ill.	1939	1942
Charles S. Prest, M.D., Brooklyn, N. Y.	1912	1923 Charter
Dr. Edward W. Robbins, Philadelphia, Pa.	1943	
Clarence C. Ruchhoft, Cincinnati, Ohio	1934	1945
Harold R. Sandstead, M.D., Bethesda, Md.	1943	1946
Martin B. Scheuer, M.D., New York, N. Y.	1953	
Edward C. Schneider, Ph.D., Middletown, Conn.	1913	
Francis J. Sette, Gainesville, Fla.	1930	1934
Marshall A. Shaffer, Silver Spring, Md.	1950	
Morris S. Siegel, LL.B., J.D., Los Angeles, Calif.	1940	1950
Joseph Slavit, M.D., Brooklyn, N. Y.	1939	
Henry Field Smyth, M.D., Dr.P.H., Philadelphia, Pa.	1917	1923 Charter
Donald Y. Solandt, M.D., D.P.H., Toronto, Ontario, Canada	1944	
Howard C. Stewart, M.D., Dr.P.H., Albany, N. Y.	1923	1935
Robert A. Strong, M.D., Hagerstown, Md.	1944	
James A. Summers, M.D., Little Rock, Ark.	1932	
John J. Sutter, M.D., Lakeside, Ohio	1920	1935
Marion Talbot, LL.D., Chicago, Ill.	1893	1922 Charter
J. Hart Toland, M.D., M.P.H., Philadelphia, Pa.	1950	
Dr. Andrew Topping, London, England		1954 Honorary
Mrs. Sibyl D. Ward, R.N., A.M., Chicago, Ill.	1951	
Donald W. Tripodi, M.D., M.P.H., Excelsior Springs, Mo.	1948	
William D. Weis, M.D., Crown Point, Ind.	1934	
Harry Weiss, M.D., New York, N. Y.	1941	
D. E. W. Wendstrand, M.D., Tryon, N. C.	1920	
William J. West, M.D., State Farm, Va.	1909	
Abba W. Williams, M.D., Woodcliff, N. J.	1904	1925
Clarence E. Yount, M.D., Prescott, Ariz.	1946	

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Employment Service

The following pages present information for those seeking public health personnel and for those seeking positions in public health. Other information concerning vacancies and personnel available is on file in the Association Office. Anyone wishing to have the benefit of this additional information can obtain it by writing to the Vocational Counseling and Placement Service of the Association.

Advertising space in these pages is available at special rates for the use of employers or individuals. The charges are $5 for the first 50 words or fraction thereof and $1 for each additional 10 words or fraction thereof. There is no charge to members or Fellows of the Association who desire to utilize the **Positions Wanted** portion of these pages.

POSITIONS AVAILABLE

Illinois. Wanted: **Dentist**—to assume direction of county health department dental clinic and program. New equipment; dental assistant available; county of 65,000; no experience necessary; excellent personnel policies; salary open. Contact Dr. H. O. Collins, Majestic Bldg., Quincy, Ill.

Dentist—Director of city-wide program, at a salary range of $7,239 increasing to $8,222. Five-day week; pension; civil service appointment. Excellent general health program. Dr. E. R. Krumbiegel, Milwaukee Health Dept., City Hall, Milwaukee 2, Wis.

Health Director's Assistant—Salary range $5,616–$6,656 per year. Open to male and female resident citizens of the United States who possess the mimimum qualifications. Medical degree is not required for this position. Complete details may be secured by writing to Personnel Director, Municipal Bldg., Hartford, Conn.

Assistant Superintendent of Hospitals and Institutions—Salary range $5,408–$6,448 per year. Open to male resident citizens of the United States who possess the minimum qualifications. Complete details may be secured by writing to Personnel Director, Municipal Bldg., Hartford, Conn.

Maternal and Child Health Director—for established county health department serving 600,000 population suburban to Detroit. Capable person would be considered for faculty appointment to University of Michigan School of Public Health. Desirable qualifications include two years' approved pediatric residency, M.P.H. degree, and three years' experience in a MCH program. Salary $11,167–$13,598 plus mileage. For full details write to Dr. Howard Cadwell, Director, Wayne County Health Dept., Eloise, Mich.

Physician—$11,985.12–$14,031.36. To have charge of the state-wide Adult Health Section of the Michigan Department of Health. Plans special projects; directs educational activities; and conducts such control programs as are possible for cancer, diabetes, rheumatic fever, and other diseases as are prevalent among the adult population. Desire physician with an active interest in public health—plus practice in internal medicine or actual public health experience. Apply Mr. R. J. Murray, Michigan Dept. of Health, Lansing 4, Mich.

Public Health Physician—in city-county health department as director of chronic diseases and tuberculosis control. Includes teaching at the School of Medicine. Public health training and experience essential. Minimum salary $8,500–$9,000. Write to Director of Health, 240 E. Madison St., Louisville 2, Ky.

Public Health Physicans—for local health officer positions now open in Oregon. Must have M.D. degree from Class A medical school plus M.P.H. and be eligible for licensure in Oregon. Starting salary $10,000 or more depending on experience and training. Merit system; state retirement supplemented by Social Security. Write to: Mr. A. T. Johnson, Personnel Director, Oregon State Board of Health, P. O. Box 231, Portland 7, Ore.

Public Health Nurses—State level consultant, local supervisors and staff. Choice of locations. Liberal vacation and sick leave. First level professional P.H.N. salary range $300–$400; intermediate level $340–$440; supervisor $380–$480; consultant $420–$525. Write State Board of Health, Helena, Mont.

Public Health Nurse—for teacher of public school health position in Chicago public schools. Six-hour day, five-day week, 40-week year. Annual salary with baccalaureate degree, minimum $3,750, maximum $6,000; with master's degree, minimum $4,000, maximum $7,000. Salary adjustment for previous experience allowed following certification. Require (a) a bachelor's degree in public health nursing, or (b) a registered nurse certificate and a bachelor's degree in social work, or (c) a registered nurse certificate and a bachelor's degree in public health education. 15 semester hours in education. Reply to Marie A. Hinrichs, M.D., Director, Bureau of Health Services, Chicago Public Schools, 228 N. LaSalle St., Chicago 1, Ill.

Public Health Nurse—for a generalized public health nursing program under good supervision in a beautiful rural county within good commuting distance of New York City. Five-day week, three weeks' annual vacation, salary $3,695–$4,755. County cars provided. Contact Supervising Nurse, County Office Bldg., 22 Market St., Room 21, Poughkeepsie, N. Y.

Staff Nurses and Sanitarians—Two nurses and two sanitarians for expanding generalized program. Five-day week, three-week annual vacation. Retirement, sick leave, seven and one-half cents for duty travel. Salary according to qualifications. Clark County Health Dept., Box 392, Las Vegas, Nev.

Public Health Engineers—San Diego County offers permanent position as consultant on engineering phases of public health practices and problems. Applicants must be college graduates experienced in public health engineering and registered in California as civil engineers. For details write Civil Service, Room 402, Civic Center, San Diego, Calif.

Public Health Engineer or Administrator—Excellent opportunity in middle-sized city for a recent graduate. Organization of a strong municipal health department in process. Salary range from $5,352–$6,504 per year. Apply City Manager, Ottumwa, Iowa.

Sanitarian—for community of 50,000 people. Salary to be discussed. State qualifications. **Box S-26,** Employment Service, APHA.

Sanitarians—Immediate openings. Beginning salary $356 per month with increases to $436 per month in three years. Generous vacations, sick leave, and retirement provisions. County car furnished. Excellent working conditions in the fastest growing county in the San Francisco Bay Area. Requirements: (1) eligibility for/or registration as sanitarian in California; (2) bachelor's degree in sanitary or allied science; (3) civil service (APHA) examination. Apply: Charles B. Ruegnitz, Chief, Bureau of Sanitation, Alameda County Health Dept., 15000 Foothill Blvd., San Leandro, Calif.

Sanitarians—Two positions available. Sonoma County (Calif.) Department of Public Health. Starting salary $341. County car furnished. Civil service. Excellent living conditions. Contact R. S. Westphal, M.D., 3325 Chanate Road, Santa Rosa, Calif.

Public Health Sanitarians or Engineers—for generalized environmental health program in an urban county health department located in a university town. Starting salary $4,450 per year with merit increases available over a four-year period to $5,170. B.S. degree in sanitary science, or equivalent, and one year's experience or a B.S. degree in engineering (sanitary option) necessary. After six-month orientation, a limited amount of job time may be made available for pursuing graduate studies at the University of Michigan School of Public Health. Write Otto K. Engelke, M.D., Health Officer, Washtenaw County Health Dept., County Bldg., Ann Arbor, Mich.

Sanitarians—for generalized sanitation program in rapidly growing metropolitan area, county population 282,000. College degree in sanitary science or related fields required. Experience desirable but not required. Salary determined by qualifications. Liberal retirement, vacation, sick leave, and travel allowances. Write: Director, Macomb County Health Dept., County Bldg., Mt. Clemens, Mich.

Vector Control Specialist—Excellent opportunities with California Department of Public Health, $505–$613 a month. Requires college major in engineering or biological sciences plus four years' experience in entomology or in sanitary or public health engineering, including two years' vector-control experience. California residence not required. Examinations will be held only in California. Write State Personnel Board, 801 Capitol Ave., Sacramento 14.

Public Health Engineer—Qualifications: degree from accredited school of engineering, civil or sanitary, and two years of experience in public health work. Salary $5,800–$6,800. Inquire of Ian D. McLaren, M.D., Commissioner, Cattaraugus County Dept. of Health, P. O. Box 573, Olean, N. Y.

Health Commissioner—City of Wauwatosa Health Department; staff of 16 persons; population 45,000; possession of a Wisconsin medical license and preferably an M.P.H. degree with some public health experience (substitutions permitted); salary open depending on qualifications. Write Personnel Director, City Hall, 7616 Harwood Ave., Wauwatosa 13, Wis.

Psychiatric Social Worker—Wanted by the Mental Health Division of the Volusia County Health Unit, Daytona Beach, Fla. Must be a graduate of an approved school of social work and a PSW major and preferably with some experience in a child guidance clinic. Salary will be based on qualification, training, and experience as determined by the Florida Merit System. R. D. Higgins, M.D., Director, Volusia County Health Unit, Daytona Beach, Fla.

Nutritionists—$4,572–$4,952 per year. Requirements: dietary internship and master's degree in public health or nutrition. Consultant to public health nurses, schools,

clinics, community groups, and dietary interns. Forty-hour, five-day week. Private car rental allowance. Liberal vacation, sick leave, and retirement policies. Apply: Detroit Civil Service Commission, 612 City-County Bldg., Detroit 26, Mich.

Wanted: **Public Health Laboratory Bacteriologist**—Five-day week; start $330 monthly; county retirement system; California certificate necessary. Write: Dr. Heindl, 810 Scenic Drive, Modesto, Calif.

Public Health Nursing—Positions available in Health Department with the city of Flint, a rapidly growing city of 180,000 population. Beginning, intermediate, and administrative positions are available. Five-day, 40-hour week, with liberal retirement, vacation, and sick leave policies. Beginning salary rates, depending on experience and qualifications, $3,498, $3,783, $4,147 with automatic increases. Apply Flint Civil Service Commission, City Hall, Flint, Mich.

Wanted: **Health Officer**—for district composed of three rural counties in Suwannee River Valley. Population 38,000, budget $58,000, personnel 16. Headquarters in Madison, lovely modern town of 3,500. Must be medical doctor with master's degree in public health, some experience desirable, between the ages of 28–45. Beginning salary $9,000–$9,600. Reimbursed for travel. First class merit and retirement systems. Vacation and sick leave. Position now open. Wilson T. Sowder, M.D., M.P.H., State Health Officer, P. O. Box 210, Jacksonville, Fla.

Bacteriologist—New York State County Laboratory. Modern, well equipped and staffed laboratory. Master's degree or bachelor's degree with equivalent experience. Civil service, but temporary appointment can be arranged. Salary: $4,200 going to $4,700 by five annual $100 increments. Joseph Lebowich, M.D., Saratoga County Laboratory, 215 Church St., Saratoga Springs, N. Y.

Health Educator—for long established well organized health department. Master's degree from approved school of public health, with specialization in health education required. Salary $4,200–$4,800. Good personnel policies. Agency car provided. Cattaraugus County Dept. of Health, P. O. Box 573, Olean, N. Y.

International Vacancies

Malariologists, Public Health Administrators, Public Health Engineers, Public Health Nurses, Nurse Educators—There are several positions open in Latin America and the Caribbean for persons in the above categories. The essential qualifications are public health training and extensive field experience. Malariologists need considerable experience in malaria programs and use of the new residual insecticides. Nurses require advanced training in public health nursing or nursing education, as well as extensive experience in supervision, administration and/or teaching. Spanish is desirable in nearly all cases. Salaries and allowances range from $6,000 to $11,000 per annum. For further particulars, write to the Personnel Officer, PASB/WHO, 1501 New Hampshire Ave., Washington 6, D. C.

Public Health Engineer—United Nations World Health Organization invites applications for this post on a schistosomiasis control and demonstration team in Egypt. Candidates should be qualified public health or sanitary engineers, although undergraduate training in engineering may also be considered. In both cases specific experience in schistosomiasis control by the use of molluscicides is required. Additional experience in vector control in relationship to irrigated areas is desirable. The post involves responsibility for planning, organizing and supervising the environmental sanitation phases of the project, including (1) the use of molluscicides in irrigation channels and drains and weed clearance, to reduce vector snail populations; (2) the organization of sanitation measures to prevent pollution of waterways and exposure of population to infection in waterways and provide for safe water supplies and excreta disposal facilities; (3) to act as adviser to the government, through the project's senior adviser, on public health engineering technics applicable to schistosomiasis control and to train nationals in such technics. Two-year contract, subject to renewal, commencing salary $6,000 United States tax free. Written applications, in English, should state nationality, age, family, education, full details of past and present employment, and should be addressed to PHE/EMRO, Personnel Section, World Health Organization, Palais des Nations, Geneva. Only those candidates whose qualifications and experiences are considered really suitable will receive a reply. Closing date February 3.

POSITIONS WANTED

Health Educator—British subject, holding M.Sc., M.P.H., and Ph.D. degrees in health education and with several years' experience in teaching health education in medical college, teacher's training college, and elsewhere and organizing country-wide health education programs in a British colony, seeks position as a health education consultant or as health education professor with any international agency or foreign governments. Write **Box H.E.–70,** Employment Service, APHA.

Medical Entomologist—Teaching background, Public Health Service experience from 1948 to 1953, recent Ph.D. degree. Married, two children. Desire employment with state or city health department, or staff position at college or university. **Box M–16,** Employment Service, APHA.

Commercial Advertisements

All communications on the following commercial advertisements should be sent to Burneice Larson, Medical Bureau, Palmolive Building, Chicago 11, Ill.

OPPORTUNITIES AVAILABLE

(a) Health commissioner; staff of 20; town, 90,000, short distance from large city, medical center; $12,000. (b) Public health physician particularly well qualified in epidemiology; foreign assignment; unusual opportunity. (c) Health commissioner; two-county health department; California. (d) Director, public schools' health program; 12 nurses; school population, 21,000; East. (e) Supervisor and head nurses; public health department; foreign operations, one of country's leading industrial companies; $9,200 and $8,580, respectively. (f) Assistant professor newly established college of nursing; university medical center; South; $6,000. (g) Senior and junior public health nurses; modern California health center; general program including school service; $3,600–$5,000. (h) Health educator; teach personal and community hygiene to freshman class; leading university college for women; East; $5,000 for scholastic year. (i) Health educator; Pacific Northwest. (j) Public health engineers; state health department; East.

OPPORTUNITIES WANTED

(a) Public health physician, M.P.H., Hopkins; eleven years, director, metropolitan health department; Diplomate, American Board. (b) Public health nursing administrators; B.S., P.H., M.S. (health education); four years' experience as supervisor of state public school nursing; seven years, university teaching. (c) Health educator; Ed.D., Columbia; six years, assistant professor, health educator; four years, health educator, state health department. (d) Sanitarian; B.S.; graduate training, environmental sanitation; five years, sanitarian, county health department. (e) Public health bacteriologist; M.S. (bacteriology); seven years, bacteriologist, metropolitan health department.

News from the Field

WHO NEWS

Polio Vaccination of World Concern

A group of world medical scientists met under WHO auspices in Stockholm, November 21–25, to explore the many urgent problems relating to poliomyelitis vaccination. It was the first opportunity for European, American, and South African research and health workers to have an across-the-table exchange of knowledge and experience. It was reported that approximately 10 million children in five countries have been vaccinated against polio with no ill effects, apart from the comparatively few cases in the United States traced to the use of certain batches of faulty vaccines.

This study group reviewed the experience in the production and use of polio vaccines in eight different countries. On the basis of this bringing together of authoritative information and their recommendations to Director-General Candau, WHO hopes to be able to give practical guidance to national health authorities requesting it. The two main considerations on which any decision, by national health authorities, whether or not to begin polio vaccination programs should be based were suggested as:

a. The seriousness of the polio situation in the country concerned, particularly with regard to the paralytic form.

b. The cost and practicability of a vaccination program in relation to available funds and facilities, the saving in human suffering, and the cost of hospital and social care that may result.

The study group heard a paper contributed by Jonas Salk, M.D., who was prevented from attending at the last moment. Other scientists from the United States attending were Alexander D. Langmuir, M.D., chief of the Epidemiology Branch, Communicable Disease Center, Atlanta; Professor J. R. Paul, Yale University School of Medicine; and A. B. Sabin, M.D., Children's Hospital Research Foundation, University of Cincinnati College of Medicine.

Planning Vital Statistics Services

Although not the work of WHO, the "New Handbook of Vital Statistics Methods," issued by the Statistical Office of the United Nations, is especially relevant to the work of WHO. The volume aims, "to help countries in the development and appraisal of their recording of live- and stillbirths, deaths, marriages, divorces, and other vital statistics."

Reportedly "the first survey of such a comprehensive nature ever to have been made," the handbook gives a cross-section of practices and methods in more than 100 countries and territories throughout the world, as well as recommendations for the guidance of countries and a comprehensive list of references.

The volume has interest also for historians and anthropologists. It includes a historical survey of the registration of vital statistics including the earliest known and well developed system among the Incas of Peru, who used a knotted string (quipus) instead of a written alphabet, and the influence of the Napoleonic Code, among others.

Columbia University Press, 2960 Broadway, New York, N. Y.

WHO Study Group on Atherosclerosis

Following a request of the member governments that WHO study the situation with respect to degenerative diseases of the heart and arteries, a Study Group on Atherosclerosis met in Geneva, November 7–11. The group, chaired

by Herman E. Hilleboe, M.D., New York state health commissioner, included 15 specialists from France, Great Britain, Japan, the Netherlands, Sweden, and the United States. It is expected that the report of the Study Group, to be available later, will indicate the most profitable directions of research as well as WHO's role in bringing together the researches being carried on in various parts of the world.

In addition to Dr. Hilleboe, Professor Ancel Keys, University of Minnesota, Dr. J. Watt, director of the National Heart Institute, and Professor J. Yerushalmy, University of California, were members of the Study Group.

White House Education Conference

Nearly 2,000 participants, 1,400 of them representatives of the 52 states and territories, shared in the White House Conference on Education, meeting in Washington November 28–December 1. Chairman of the President's committee organizing the conference and responsible for a final report to the President, was Neil McElroy, president of Procter and Gamble Company, soap manufacturers. He shared the platform with Vice-President Richard Nixon as one of the main speakers at the opening session of the meeting.

The six main subjects discussed are:

1. What should our schools accomplish?
2. In what ways can we organize our school systems more efficiently and economically?
3. What are our school building needs?
4. How can we get enough good teachers—and keep them?
5. How can we finance our schools—build and operate them?
6. How can we obtain a continuing public interest in education?

Reports on the two final questions were presented at the closing session of the conference when the chief speakers were Marion Folsom, Secretary of Health, Education, and Welfare, and U. S. Commissioner of Education, Samuel M. Brownell.

The conference was organized into 160 separate discussion groups numbering about a dozen persons each. Professor Ira V. Hiscock, President of the American Public Health Association, served as discussion leader for one of these groups. Through this and other groups, it was possible to get consideration of mental health in the schoolroom, personal and school health, the needs of the handicapped and gifted, and the interrelation of health and education.

The final report of the conference, made to the President and to be available to the general public, will be in three parts consisting of:

1. A collection of the official reports of the conferences in each state and territory
2. The transcript of the discussions held during the three days
3. A summary of the discussions and the conclusions of Mr. McElroy's committee of 34 persons, "of many backgrounds, of many faiths, from practically every geographical region of the country."

Health Insurance for 100 Million

The preliminary report of the annual survey on "The Extent of Voluntary Health Insurance Coverage in the United States—as of December 31, 1954," was recently released by the Health Insurance Council. Here it is estimated that over 100 million persons have some degree of protection against the costs of hospitalization; almost 86 million have some surgical expense protection; over 47 million persons are protected against some of the costs of nonsurgical physician's services; over two million are covered by the newer major medical expense protection.

The last named is designed "to protect against the financial impact of unusually serious and expensive illness," when the costs of care go beyond the

more usual coverage. Benefits may be paid whether hospitalization is involved or not and they cover almost all types of service required for care, including home nursing and prescribed medications. In addition to these four types of health or sickness coverage some 39 million workers have some protection under voluntary insurance contracts against loss of income on account of illness or injury.

The report does not indicate the extent of financial protection provided in relation to the medical care bills of the persons covered by the various forms of voluntary health insurance. However, it reports that the insuring organizations paid almost a billion and a half dollars in hospital benefits and 735 million dollars for surgical and other medical benefits. Amount of premiums paid to the insuring organizations is not stated. The report indicates that voluntary health insurance continues to expand, both in terms of the numbers of persons covered and of the amounts paid in benefits. The report concludes: "Voluntary health insurance has not yet reached the limits of its potential service to the American people. This fact is clear, even though the over-all effectiveness of such insurance in doing the job it is designed to do cannot well be measured by statistics alone."

Information Office, Health Insurance Council, 522 Fifth Ave., New York 36, N. Y. Free.

Infectious Hepatitis in Kentucky

A study of the ways by which infectious hepatitis is spread and the steps that can be taken to control it has been undertaken in Kentucky. More than 1,000 cases of the disease have been reported in the state in each of the last three years. The Kentucky State Health Department and the Public Health Service are cooperating in the study, as are the health department staffs of 16 selected counties in which numbers of cases have been reported. The Service is loaning James Mosely, M.D., from the Atlanta Communicable Disease Center to assist the epidemiologist, Irwin Schafer, M.D., in the department's Division of Preventive Medicine, in carrying out the study.

How Much Does Work Hurt the Heart?

The American Heart Association is supporting a project to study the relationship between work and exercise and heart disease. Drs. Milton Helpern and Myron Texon have been appointed investigators for the project. Another and related study in prospect by the association is a critical analysis of legal decisions concerning cardiovascular cases and the relation to workmen's compensation law and practice.

Milk and Food Sanitarians Elect

The following officers were elected by the International Association of Milk and Food Sanitarians at the recent 42nd annual meeting in Augusta:

President—Harold S. Adams, associate professor of public health, University of Indiana School of Medicine

President-Elect—Paul Corash, chief, Division of Milk Inspection, New York City Health Department

Secretary-Treasurer — Howard Wilkowske, Gainesville, Fla. (reelected)

Laboratory Animal Regulation Laws

Legal regulations controlling the use of laboratory animals were among the subjects discussed at the fifth Animal Care Panel Meeting held in 1954. This topic was selected in recognition of the importance of animals in laboratory work and the fact that occasional opposition to their use may create difficulty for the laboratory administrator. Included in the symposium on legal

regulations was a discussion on the California animal care law, District of Columbia regulations about the procurement of animals, and Baltimore's dog ordinance. The four symposium papers are available free from the Illinois Society for Medical Research, 951 East 58th St., Chicago 37.

The Animal Care Panel is a discussion group composed of individuals in charge of animal care quarters at research and teaching institutes. Annual meetings open to interested persons are held for discussion of matters of importance to the care of laboratory animals. The panel does not publish a periodical, but papers presented at each annual meeting are published in a volume of Proceedings, the fifth and most recent of which is available from Dr. R. J. Flynn, Secretary-Treasurer, Animal Care Panel, Box 299, Lemont, Ill.; $4.

Rehabilitation Course

The University of Pennsylvania is offering a course, "Principles of Rehabilitation," at the Rehabilitation Center of University Hospital in Philadelphia. The course is designed to present the basic concepts of rehabilitation in its varied aspects. Physicians, registered nurses, occupational therapists, social workers, rehabilitation counselors, and others concerned with rehabilitation of the handicapped are eligible and enrollment will be limited. The course will be given at four different periods as follows: December 5–10, 1955; February 6–11, 1956; April 2–7, 1956; June 25–29, 1956.

A limited number of trainee stipends to eligible persons attending the course are available from the U. S. Office of Vocational Rehabilitation. Applications for these and detailed information about the course from Rehabilitation Center, Hospital of the University of Pennsylvania, Philadelphia 4, Pa.

A New Ciba Bi-Weekly for Doctors

With a September 12, 1955, issue Ciba Pharmaceutical Products began the bi-weekly publication of "Medical News: A Newspaper for Physicians." Its statement of policy indicates "brief, up-to-the-minute news and feature stories about the rapidly moving world of medicine."

News sources include special correspondents in the United States, Europe, Latin American, and Asia, reports from whom will be published on what is happening in "such fields as clinical medicine, medical education, research, public health, medical economics and legislation directly affecting physicians."

The policy further states that "Medical News" will be an unbiased newspaper published by an independent board of editors, not "influenced by Ciba's special interests as a pharmaceutical manufacturer." The first three issues at hand would seem to bear out the statement of policy. "Medical News," 130 E. 59th St., New York 22, N. Y. Free.

New Squibb Award in Chemotherapy

Two technicians of the New York State Department of Health, Drs. Elizabeth L. Hazen and Rachel Brown, have received the first Squibb Award in Chemotherapy for their discovery of nystatin. This is said to be "the first broadly effective antifungal antibiotic safe enough for human use" and to "fill an important gap in the range of drugs for chemotherapy."

Dr. Hazen is senior microbiologist in the Department of Health Laboratories; Dr. Brown, who has been in the laboratories 22 years, was trained in chemistry and bacteriology. The joint award of $5,000 was presented in Albany on October 27 at the Augustus B. Wadsworth Lecture by John C. Lep-

part, vice-president of Olin Mathieson Chemical Corporation, whose Squibb division sponsors the award.

Hygienic Guide Series

Hygienic Guides available to industry and other interested persons are being published by the American Industrial Hygiene Association in its "Industrial Hygiene Quarterly." The initial series appears in the September, 1955, issue. The purpose of the guides is to present authoritative and substantiated information on the toxicity of common industrial materials. The guides will also bring together pertinent information required for hazard evaluation. Present plans are that guides will be prepared covering the common industrial materials and chemicals and be published in each issue of the quarterly. Individual guides are reprinted separately and are available from the American Industrial Hygiene Association, 14125 Prevost, Detroit 27, Mich.; 25 cents.

A West Virginia County Organized

West Virginia has a newly organized city-county health department, but currently without a full-time health officer. Mercer County and the two cities of Bluefield and Princeton, taking advantage of 1955 legislation, have merged their health services, thus covering a population of 75,000 under a single administration. Because no health officer has been obtained, local practicing physicians are taking turns, a month at a time, to serve as part-time health officer.

A Spate of Public Health Awards

In the December, 1955 Journal will be found details of the Sedgwick and Lasker Awards presented by the American Public Health Association during its recent Annual Meeting in Kansas City.

In addition five other agencies meeting with the Association used the opportunity to present their own awards for a variety of public health accomplishments. The oldest of these awards is the William A. Howe Award of the American School Health Association first established in 1940. The 1955 winner is Maxwell Cyrus Hammond, M.D., of the Washington Office of the American Medical Association, cited for his contribution to the literature of school health, particularly his co-authorship of the Winston Health Series.

Lucy S. Morgan, Ph.D., professor of health education, School of Public Health, University of North Carolina, and co-editor of its annual "Health Educators at Work," received the 12th annual Elizabeth Severance Prentiss Award in Health Education of the Cleveland Health Museum. She was cited, among many accomplishments, for leadership in establishing at the University of North Carolina the first chair of Health Education in the United States and for establishing health education training interneships, and of improving and modernizing the whole concept of public health administration.

The 1955 award of the Public Health Cancer Association was presented to Surgeon General Leonard A. Scheele, who set up the first cancer control program of the Public Health Service. This award was established in 1952 to be given to "an individual who had done outstanding work in cancer control." It is not given annually nor at any specified time. The first winner was Dr. Frank Rector for his work in cancer education. In 1953, Herbert I. Lombard, M.D., director, Division of Cancer and Chronic Diseases, Massachusetts Department of Public Health, won the award. No award was made in 1954.

The Kimble Methodology Research

Award, sponsored by the Kimble Glass Company and first presented in 1953, was in 1955 won by a group of scientists of the Robert A. Taft Engineering Center of the Public Health Service for developing a fast and accurate "method of analyzing the bacteriological content of water." They are Harold F. Clark, Edwin E. Geldreich, Harold L. Jeter, and Dr. Paul W. Kabler. The award was made at the banquet of the Conference of State and Provincial Public Health Laboratory Directors which administers the award.

The Crumbine Awards in Sanitation were presented for the first time. These were established by the Public Health Committee, Cup and Container Institute, in honor of the late Samuel J. Crumbine, M.D., long time health officer of Kansas and pioneer in sanitation practices. The Cowlitz-Wahkiakum Counties Health Department of Washington State was selected for "outstanding achievement in the development of a program of eating and drinking sanitation" and the New York City Health Department for "outstanding achievement in the development of a comprehensive program of environmental sanitation."

Erie County Health Department, Yes!

A resounding victory of more than three to one was the result of a November referendum calling for the establishment of a county-wide health department in Erie County, Pa. This result was preceded by more than a year of public discussion through meetings, radio, TV, newspaper, the activity of a county health council, of the county medical society, the tuberculosis society, and many other citizen and health groups.

The vote was favorable in the city of Erie which already had an organized health department, as well as in the rest of the county. And the chairman of the Board of County Commissioners has reported that the county has enough money to finance a health department.

The new unit will serve a population of about 225,000, a minor percentage of whom have previously been served, if at all, by the State Health Department, another segment by several part-time local health offices, and more than half by the Erie City Health Department. The new department is now in process of organization and staffing.

Meeting of State Health Directors

At the annual meeting of the Association of State and Territorial Health Officers with the Surgeon General and the Director of the Children's Bureau in Washington, November 6–12, Surgeon General Leonard A. Scheele called for a "broad spectrum" approach. Health services should include vocational rehabilitation, water resources, and community welfare as well as sanitation and communicable disease control. He reported bright prospects of a victory over poliomyelitis.

The new Secretary of Health, Education, and Welfare, Marion B. Folsom, promised efforts in Congress to obtain more funds for training personnel and more flexibility in grant funds.

The association adopted resolutions favoring the extension of the Hill-Burton act to 1960 instead of its present cut-off date of 1957. Extension was also recommended of the February 15, 1956, date for federal grants to help states buy polio vaccine. A substantial increase in the number of improvised hospitals for disaster use was recommended. Cooperation was pledged to the Public Health Service in providing medical and hospital services to Indians.

The following officers of the association were elected:

President—Daniel Bergsma, M.D., New Jersey state commissioner of health

Vice-President—Grady F. Mathews, M.D., Oklahoma state health commissioner

Secretary—Franklin D. Yoder, M.D., Wyoming director of public health (re-elected)

Executive Committee—Herman E. Hilleboe, M.D., New York state commissioner of health; J. W. R. Norton, M.D., North Carolina state health officer; T. F. Sellers, M.D., director, Georgia State Health Department; Mack I. Shanholtz, M.D., Virginia state health commissioner.

American Heart Association Meets

The 1955 annual meeting and scientific sessions of the American Heart Association in New Orleans, October 22–24, was attended by more than 2,500 physicians, medical students, and others. At this time new officers were elected and three Gold Heart Awards and four Howard W. Blakeslee Awards for distinguished reporting of advances were presented.

Gold Heart Awards for outstanding contributions to cardiovascular medicine and to the heart disease program were given respectively to T. Duckett Jones, M.D. (posthumously), who until his death in November, 1954, was one of the world's leading authorities on rheumatic fever; Thomas M. McMillan, M.D., professor of clinical medicine, University of Pennsylvania Medical School and editor of "Circulation," the association's scientific journal; and Frederick K. Trask, Jr., retiring chairman of the association's finance committee.

The Blakeslee Awards were as follows:

Frances Burns, medical writer, Boston Daily Globe, for a series of 13 articles on heart research and advances in treatment and prevention.

Jane Stafford, medical writer, Science Service, for year-round coverage of cardiovascular developments syndicated to newspapers and magazines.

William Peters, free lance writer for "A New Heart for Pamela" in the September, 1954, issue of Cosmopolitan Magazine.

Columbia Broadcasting System for "Gate 27," a film telecast over the CBS-TV network in the series "The Search."

Irvine H. Page, M.D., director of research at the Cleveland Clinic, was installed as president, succeeding E. Cowles Andrus, M.D. President-Elect is Edgar V. Allen, M.D., professor of medicine, Mayo Foundation for Medical Education and Research, University of Minnesota.

NAMH Increases Field Staff

The National Association for Mental Health, with the aid of a grant from Smith, Kline and French Laboratories, has added six field representatives to its national staff. Each of these, assigned to a specific area, began making visits to local associations within their regions in October, 1955. They will assist the state and local associations in strengthening their own structures and in organizing communities to meet their mental health needs, and to give guidance in campaign planning and organization. They will also assist in organizing new state and local associations. For the present they will work out of the national offices in New York without regional headquarters.

The six representatives are:

Region I—Mary L. McDonald
Glenn H. Reynolds
Region II—Margaret Margrave
Region III—James J. Burr
Ruth Sensbach
Region IV—George A. Nevin.

Cancer Chemotherapy Committee

The Cancer Chemotherapy National Committee has been established to have general guidance of a national voluntary program of cooperative research and development to find and produce effective drugs for the treatment of cancer. Sidney Farber, M.D., scientific director, Children's Cancer Research Foundation, Boston, heads the committee which defines the scope of the program, develops general policies, assists

in obtaining financial support for the work, coordinates the activities of the sponsoring organizations, and observes the rate of progress of the entire effort.

The organizations sponsoring the new National Committee are: American Cancer Society, Atomic Energy Commission, Damon Runyon Memorial Fund for Cancer Research, the Food and Drug Administration and the National Cancer Institute of the U. S. Department of Health, Education, and Welfare, and the Veterans Administration. These agencies are providing a small full-time staff to administer the program, organize an information exchange, and give needed assistance to research scientists. This staff is headed by Dr. Kenneth M. Endicott of the National Cancer Institute as executive secretary and is located at the Cancer Chemotherapy National Service Center in Bethesda.

American School Health Association

At the meeting of the School Health Association in Kansas City in November, 1955, I. P. Barrett, M.D., director of health services, Fort Worth, Tex., public schools, succeeded H. F. Kilander, Ph.D., professor of education, New York University, as president. Ruth Weaver, M.D., director, Division of Medical Services, Philadelphia Board of Education, succeeded Fred V. Hein, Ph.D., Bureau of Health Education, American Medical Association, as vice-president in charge of program. A. O. DeWeese, M.D., director of student health, Kent State University, Kent, Ohio, continues as executive secretary-treasurer.

A New Blood Coordinating Group

The Joint Blood Council, with offices in Washington, D.C., has been organized by the five national associations principally concerned with procuring, processing, preserving, and distributing blood and blood derivatives. Its aim is to coordinate activities in this field such as interchange of blood, accreditation of blood banks, standardization of procedures, stimulation of blood donor campaigns, encouragement of research, setting up new blood banks in times of emergency, and handling requests of the military.

The five cooperating agencies are the American Association of Blood Banks, American Hospital Association, American Medical Association, American Red Cross, and American Society of Clinical Pathologists. Frank E. Wilson, M.D., is the director; offices are at 1832 M St., N.W., Washington, D. C.

Epidemiology Course for Nurses

The Communicable Disease Center of the Public Health Service, Atlanta, Ga., is offering a refresher course in communicable disease control to public health nurses and instructors in communicable disease nursing, May 7–May 26, 1956. The course is designed to increase the technical knowledge and skills of nurses in the prevention and control of communicable diseases.

Following the completion of the course, field experience under supervision may be available to a limited number of students.

Application should be made to the director of public health nursing, your state health department, or to Chief, Nursing Section, Epidemiology Branch, Communicable Disease Center, 50 Seventh St., N.E., Atlanta, Ga.

Art Contest for the Handicapped

An Art Contest in which entries are accepted from handicapped persons only is in progress at the National Gallery of Art in Washington. The contest, being held from November 6, 1955, to May 1, 1956, is sponsored jointly by the President's Committee for the Em-

ployment of the Physically Handicapped, the Veteran's Administration, and the Office of Vocational Rehabilitation. Funds are provided by the Morris Morgenstern Foundation of New York.

Entries, one to an individual, may be made any time during the period. Winners will be announced by July, 1956, and awards presented in December. Entries submitted may be in oil, water color, gouache, or tempora on canvas or paper. For purposes of the contest a handicapped is defined as "one whose ability to function in normal day-to-day activities is substantially impaired by disease, congenital condition, or injury." Twenty-two prizes will be awarded, ranging from $1,000 for the first prize to a $50 United States Savings Bond for each of 12 entries.

Further information from National Art Contest for the Handicapped c/o Morris Morgenstern Foundation, 119 West 57th St., New York, N. Y.

VA Evaluates Psychiatric Care

The Veterans Administration is undertaking a five-year study of its mental patient care to determine what types of treatment and hospitals best promote the improvement or recovery of its psychiatric patients. Relative costs will also be evaluated.

The study has three basic purposes: "(1) to determine the relative effectiveness of different treatment techniques; (2) to determine the relative effectiveness of different hospital designs, staffing patterns, and program emphases; and (3) to permit valid estimates of the relative costs of the various elements in effective treatment programs."

Such information, not now available from any source, will, it is hoped, do much toward establishing more effective care of one of the nation's largest psychiatric patient loads under a single medical management. A further end result hoped for is recovery or improvement of psychiatric patients at the least possible cost.

Richard L. Jenkins, M.D., former chief of psychiatric research in VA's Washington Office will be project director with headquarters in that city's Mt. Alto Hospital. The study will be carried out in 15 of VA's neuropsychiatric hospitals.

AEC Safety Counselors Appointed

The Atomic Energy Commission has appointed a 12-man committee to advise on health and safety regulations. Included are two representatives from state labor departments, one from legal departments, and nine from health departments. The last mentioned include:

Daniel Bergsma, M.D., New Jersey state health officer

Roy L. Cleere, M.D., Colorado state health officer

Curtiss M. Everts, Jr., director, Division of Environmental Sanitation, Oregon State Board of Health

Albert E. Heustis, M.D., Michigan state health officer

William T. Linton, executive director, South Carolina Water Pollution Control Authority

Blucher A. Poole, director of environmental sanitation, Indiana State Department of Health

Donald P. Roberts, Division of Sanitary Engineering, Tennessee Department of Health

Clarence I. Sterling, director of environmental sanitation, Massachusetts Department of Health

Arthur B. Welsh, Environmental Health Services, Pennsylvania Department of Health.

Indian Training in Sanitation Work

The U. S. Public Health Service has undertaken a program of training young Indians in sanitation in order that they may work among their own people. Recently, 30 young Indians from 12 states received an extensive six-week course in sanitation and hygiene at Phoenix, Ariz., in cooperation with the Arizona State Health Department. These have been assigned to aid

Public Health Service sanitary engineers on Indian reservations in various parts of the country.

A similar course for Alaskan natives has been carried on by the Alaska Department of Health under a contract with the Department of Health, Education, and Welfare and the supervision of the Public Health Service.

Nebraska Public Health Association

Improving Public Health in Nebraska was the theme of the annual meeting of the Nebraska Public Health Association in Lincoln, September 15–16, 1955. The various speakers pointed out unmet health needs in the state—a surprisingly high incidence of brucellosis and tuberculosis in a sample county studied, the need to fluoridate certain waters, and the high insect and rodent population, among others.

Among the speakers were Pearl McIver, R.N., from the Washington Office, Charles F. Blankenship, M.D., from the Kansas City Office of the Public Health Service, and Dale Cameron, M.D., medical director of the Minnesota Department of Public Welfare. The new psychiatric unit in Omaha was described by its director, Dr. Wittson.

Thomas D. Fitzgerald, M.D., assistant dean, Creighton University School of Medicine, was elected president. Other officers are:

President-Elect—Lester Sanger, Omaha
Vice-President—Harvey McPhee, North Platte
Secretary—Clinton Belknap, Lincoln
Treasurer—John A. Youngstrom, Omaha

Two State Laboratories Consolidate

In Florida the State Board of Health and the State Tuberculosis Board have agreed to merge their laboratory activities. This action was taken after a trial period of joint operations in one laboratory indicated that the cooperative enterprise resulted in both improvement in service and economy of operation. The merger plans were worked out by the administrator of the State Tb Board's hospital system, Roberts Davies, M.D., and the director of the State Health Department's Bureau of Laboratories, Albert V. Hardy, M.D. The latter will direct the combined laboratory service.

PERSONALS

MARGARET B. BAILEY, former staff member, Yorkville Community Mental Health Research Project, has been appointed assistant director of mental health research, New York City Community Mental Health Board.

HARRIET BECK, M.D., has been appointed director, Mental Health Division, Arizona State Department of Health, Phoenix.

WILLIAM A. BRUMFIELD, JR., M.D.,* chairman, Department of Public Health and Preventive Medicine, State University of New York, Syracuse, will succeed WILLIAM A. HOLLA, M.D.,† as Westchester county commissioner of health on March 1, 1956.

MRS. ELIZABETH K. CASO,* who has been nutrition consultant with the Diabetes Field Research and Training Unit, Public Health Service, Boston, has been appointed nutritionist, Cambridge (Mass.) Department of Health.

MARIO M. CHAVES, D.D.S.,† is dental officer, Health Promotion Branch, Washington, D. C., Pan American Sanitary Bureau, Regional Office of WHO.

GUIDO M. CROCETTI, former research associate, Hospital Council of Greater New York, has been appointed staff sociologist, New York City Community Mental Health Board.

ARCHIBALD W. DALTON, administrative assistant to the managing director, National Tuberculosis Association, New York City, has succeeded NELSON R. KRAEMER† as executive director, Massachusetts Tuberculosis and Health League. Mr. Dalton has been succeeded by WALTER FURBUSH, formerly in the Personnel Training Services.

D. ELIZABETH DAVIS, has been appointed chief medical social consultant of the chronic disease program, Division of Special Health Services, Public Health Service, succeeding

* Fellow.
† Member.

SOPHIA BLOOM,* now at the University of Chicago School of Social Service Administration working for a Ph.D. degree.

DORLAND J. DAVIS, M.D.,* virologist, National Institutes of Health, Bethesda, Md., received the Stitt Award from the Association of Military Surgeons in Washington in November.

DONALD G. DE VALOIS, D.V.M., a Public Health Service veterinary officer, has been assigned to the South Dakota State Department to aid in the re-established section of Occupational and Radiological Health, Division of Sanitary Engineering.

CHARLES L. DUNHAM, M.D., deputy director, has succeeded JOHN C. BUGHER, M.D.,† as director, Division of Biology and Medicine, Atomic Energy Commission.

SHEILA DWYER, assistant director and nursing education consultant, Tuberculosis Nursing Advisory Service, National League for Nursing, has resigned to accept a position with the inservice education program at Kentucky and West Virginia hospitals, United Mine Workers Welfare Fund.

EDWARD V. ELLIS, formerly with the District of Columbia Tuberculosis Association, is now a public health educator, Bureau of Public Health Education, Pennsylvania State Health Department, Harrisburg.

ABRAHAM W. FUCHS,* long-time top administrator of the milk and food program of the Public Health Service, and currently in Jamaica with the International Cooperation Administration as adviser on environmental sanitation problems, has received one of two 1955 citation awards of the International Association of Milk and Food Sanitarians for contributions over a period of years furthering the professional advancement of the association and enhancing its growth and reputation.

J. C. GEIGER, M.D.,* health officer of Oakland, Calif., retired on October 1. Dr. Geiger was for many years health officer of San Francisco and was host to the APHA at its 1951 Annual Meeting. He was honored at a dinner under the auspices of the City of Hope on October 23 as "The Man of the Year."

FRANK T. GREVING, former assistant executive director, Brooklyn Bureau of Social Service and Children's Aid Society, has been appointed associate director in charge of survey and consultation services, Community Research Associates, New York City.

CHARLES L. HOWELL, D.D.S.,† director, Division of Dental Health, Indiana State Board of Health, Indianapolis, has returned following an assignment with the Public Health Service in Washington, D. C.

ROBERT O. KEIM, former regional supervisor and chief accountant, Bureau of Public Assistance Disbursements, U. S. Treasury Department, has been named comptroller, Pennsylvania State Department of Health, Harrisburg.

BETTY LEMAN, former director of program development, Colorado Tuberculosis Association, is now associate, Christmas Seal Sale Division, National Tuberculosis Association, New York City.

GERTRUDE LOOS, former medical social consultant, Tuberculosis Division, Colorado Department of Public Health, is now an associate, Rehabilitation Division, National Tuberculosis Association, New York City.

HILBERT MARK, M.D.,† former director, public health and preventive medicine, Denver Department of Health and Hospitals, has returned to the Minnesota State Department of Health, Minneapolis, to work in the field of chronic diseases.

HENRY R. MASON, M.P.H.,† former secretary, Health and Hospital Division, Syracuse and Onondaga County (N.Y.) Council of Social Agencies, is now survey administrator, Division of Hospital Facilities, Massachusetts Department of Public Health, Boston.

CECIL W. MORGAN, Ph.D., consultant in rehabilitation, Veterans Administration, and former chairman, Program Services Committee of UCP-Massachusetts, has been appointed director of adult vocational services, United Cerebral Palsy, New York City.

ROBERT A. MOTHERSHEAD, D.D.S., formerly in one of the state district offices, Missouri State Health Department, is now director, Division of Oral Hygiene, North Dakota State Department of Health, Bismarck.

MILDRED MOUW, R.N.,† former assistant professor of public health nursing, University of Pittsburgh Graduate School of Public Health, has been appointed assistant chief in education, Bureau of Public Health Nursing, Pittsburgh (Pa.) Department of Public Health.

HENDRIK NIEUWENHUIZE, former secretary-general of the Netherlands National Federation for Mental Health, Amsterdam, has been named to the staff of the International Society for the Welfare of Cripples, New York City.

BENJAMIN D. PAUL, Ph.D., former lecturer and research fellow, has been appointed associate professor of social anthropology,

* Fellow.
† Member.

Harvard School of Public Health, Boston, Mass.

KATHRYN M. PICKEN, occupational therapist, New York State Rehabilitation Hospital, West Haverstraw, has received New York State's annual Certificate of Achievement as the outstanding handicapped state employee for 1955.

DEAN W. ROBERTS, M.D., M.P.H.,* director of the Commission on Chronic Illness, has been appointed executive director, National Society for Crippled Children and Adults, Chicago, Ill., succeeding LAWRENCE LINCK,† resigned.

R. G. Ross, chief milk sanitarian, Tulsa (Okla.) City-County Health Department, has received a citation award of the International Association of Milk and Food Sanitarians for contributions over a period of years furthering the professional advancement of the association, enhancing its growth and reputation.

JACOB S. SHARRAH,† former assistant director, Bureau of Industrial Hygiene, Pennsylvania State Health Department, is now industrial hygienic engineer in charge of the occupational health service, Pennsylvania Manufacturers' Association.

JOSEPH SHILEN, M.D.,* director, Bureau of Industrial Hygiene, Pennsylvania State Health Department, has resigned to become chief of the Preventive Medicine and Occupational Health Services Branch, Olmsted Air Force Base, Middletown, Pa.

JOHN SMOUSE,† senior sanitary engineer in charge of water pollution, water and sewerage, and industrial hygiene, has resigned from the Oklahoma State Health Department to join the Federal Housing Administration.

JOSE SOSA-MARTINEZ, M.P.H., Ph.D.,† is now in charge of vaccine production and control, the laboratories of the Centro de Estudios Sobre Poliomielitis in Mexico City, after a month's assignment by the Mexican Ministry of Health visiting several laboratories in the United States engaged in the Salk vaccine production and in epidemiologic work on poliomyelitis.

COLONEL BYRON L. STEGER, MC, USA,† former director, Interagency Institutes for Federal Hospital Administrators, has been named chief, Education and Training Division, Office of the Army Surgeon General, succeeding COLONEL CHARLES L. LEEDHAM, retired.

HUGH JOSEPH STENNIS, M.D., director, Taylor County Health Department, Abilene, Tex., is at the Harvard School of Public Health, Boston, Mass., as a candidate for the master of public health degree.

B. G. TENNANT, chief sanitarian Escambia County (Fla.) Health Department, has received the annual sanitarian's award of the International Association of Milk and Food Sanitarians, including a check of $1,000, as the outstanding local milk and food sanitarian who made the most meritorious contribution to the health and welfare of his community in the past five years.

HARRY B. TIEDEBOHL,† former director, Nazareth Sanatorium Laboratory, is now director of the main bacteriological and control laboratory located in Albuquerque and nine state-wide branch laboratories of the Creamland Dairies, N. M.

JOHN HOWARD VINYARD, JR., M.D., former statistician, Illinois Department of Public Health, has been appointed chief, Division of Statistical Methods, Pennsylvania Department of Health, Harrisburg.

MAJOR STEFANO VIVONA (MC), USA, M.P.H.,† former chief, Preventive Medicine Division, Office of the Surgeon, Headquarters 7th Army, Stuttgart, Germany, has been assigned as chief, Department of Environmental Medicine, Army Medical Service Graduate School, Washington, D. C.

HELEN WALLACE, M.D., M.P.H.,* former director, Bureau of Handicapped Children, New York City Department of Health, has been appointed professor and director, Department of Public Health, Preventive Medicine, and Industrial Hygiene, New York Medical College, Flower and Fifth Avenue Hospitals, New York City.

JULIUS LANE WILSON, M.D., director of clinics, Henry Phipps Institute, and professor of medicine, University of Pennsylvania School of Medicine, Pittsburgh, Pa., has been appointed director of the institute to succeed ESMOND R. LONG, M.D.*

DEATHS

CHARLES D. BOWDOIN, M.D., M.P.H.,* director, Division of Venereal and Chronic Diseases, Georgia State Department of Health, Atlanta (Unaffiliated).

PAUL B. BROOKS, M.D.,* of Montgomery, N. Y., November 19 (Health Officers Section).

KOERT KOSTER, M.D.,† of Detroit, Mich., on May 12, 1955 (Epidemiology Section).

WALTER SPENCER† of Pennsauken, Merchantville, N. J. Mr. Spencer was secretary, South Jersey Association of Water Superintendents (Engineering and Sanitation Section).

* Fellow.
† Member.

SAMUEL O. SWARTZ,† bacteriologist, Metropolitan District Commission, Water Division, Boston, Mass., on September 24 (Laboratory Section).

CONFERENCES AND DATES

State and Regional Public Health Meetings:

North Dakota Public Health Association. Bismarck, N. D. March 22–23.

Meetings of Other Organizations Coming in January, February, and March, 1956:

American Academy of Occupational Medicine. Cincinnati, Ohio. February 15–17.

American Mosquito Control Association. Hotel Beaumont, Beaumont, Tex. February 5–8.

American Society of Heating and Air-Conditioning Engineers. Sheraton-Gibson Hotel, Cincinnati, Ohio. January 23–25.

Community Chests and Councils of America. Biennial Conference. Detroit, Mich. February 5–10.

Inter-American Congress of Sanitary Engineering (Fifth). Lima, Peru. March 18–24.

National Health Forum (National Health Council). Sheraton-Astor Hotel, New York, N. Y. March 21–22.

National Society for the Prevention of Blindness. Palmer House, Chicago, Ill. March 26–28.

Pan American Congress of Ophthalmology (Fifth). Santiago, Chile. January 9–14.

Pan American Medical Women's Alliance, Fifth Congress. Santiago and Vina del Mar, Chile. March 6–14.

Public Health Conference on Records and Statistics. Washington, D. C. March 12–16.

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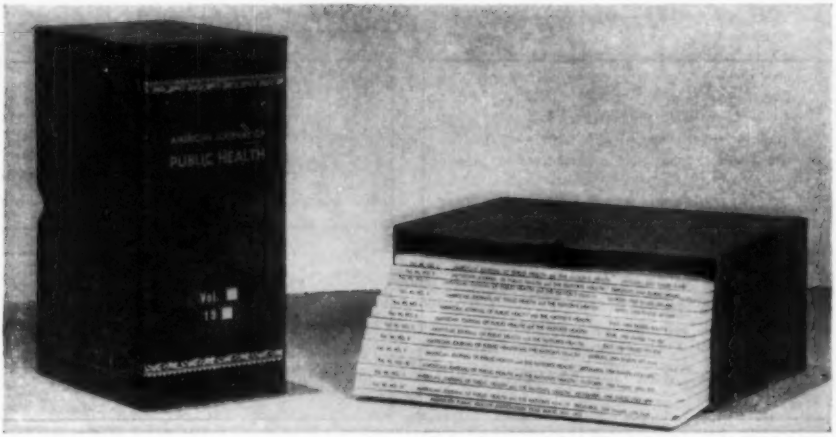

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[1] Antibiotics & Chemotherapy, Vol. IV, No. 9, Sept, 1954
[2] Antibiotics & Chemotherapy, Vol. III, 409, 1953
[3] Antibiotics & Chemotherapy, Vol. II, 30, 1952
[4] Nebraska M.J., 37:251, 1952.

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